United States Department of the Interior
Bureau of Land Management

FINAL

North Dakota Field Office

July 2005

COTEAU PROPERTIES COMPANY FEDERAL COAL LEASE BY APPLICATION (NDM 91535) FOR WEST MINE AREA, FREEDOM MINE MERCER COUNTY, NORTH DAKOTA ENVIRONMENTAL IMPACT STATEMENT

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based on the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation; rangelands; timber; minerals; watershed; fish and wildlife; wilderness; air; and scenic, scientific, and cultural values.

BLM/MT/PL-05/006

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
North Dakota Field Office
2933 3rd Ave West
Dickinson, ND 58601 701-227-7700
http://www.mt.blm.gov/ndfo/

TAKE PRIDE IN AMERICA

In Reply To:
NDM91535

July 18, 2005

Dear Reader:

The Bureau of Land Management (BLM) has prepared this Final Environmental Impact Statement (EIS) to document and disclose the results of an environmental analysis of an application received by BLM to lease federal adjacent coal to an existing mine in Mercer County, North Dakota. A copy of this document is provided for your review and comments. The Final EIS may be reviewed on the BLM Montana homepage (http://www.mt.blm.gov/). Copies of the Final EIS also are available for public inspection at the North Dakota Field Office at the letterhead address.

The Draft EIS was published in April 200, and a formal public hearing was held in Bismarck, North Dakota on June 23, 2004, to receive comments on the Draft EIS and on the fair market value and on the maximum economic recovery of the federal coal resource in the tract. Three public meetings had been held June 1-3, 2004 at New Town, Beulah, and Fort Yates, North Dakota. Comments from the meetings and comment letters received by the BLM on the Draft EIS are included with agency responses in section 5.0, Consultation and Coordination.

Fort Berthold's Three Affiliated Tribes, Fort Peck's Assiniboine and Sioux, and the Standing Rock Sioux Tribe have participated in consultation, as have the BLM, OSM, PSC, North Dakota State Historic Preservation Officer, Coteau, the National Trust for Historic Preservation, and the Advisory Council On Historic Preservation. American Indian Tribes consulted also include: Fort Belknap, Oglala Sioux Tribe, Rosebud Sioux Tribe, Santee Sioux Tribe of Nebraska, Yankton Sioux Tribe, Flandreau Santee Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Northern Cheyenne Tribe, Crow Creek Sioux Tribes, arid Lower Brule. Results of those consultations resulted in the development of the Preferred Alternative (C).

The BLM will accept public comments on this Final EIS for thirty (30) days commencing on the date the Environmental Protection Agency publishes a Notice of Availability in the *Federal Register*. When the BLM becomes aware of the date of that publication, the BLM will notify the public of the final date when comments will be accepted. Comments received after the end of the 30-day comment period will be considered in preparation of the Record of Decision as time permits.

If you wish to comment on the Final EIS, your comments should relate directly to the document. We request that you make your comments as specific as possible and that you cite the location or locations in the document on which you are commenting. Substantive comments should: (1) give any new information that could alter conclusions; (2) show why or how analysis or assumptions in the Final EIS are flawed; (3) show errors of data, sources, or methods; Or (4) request clarifications that bear on conclusions. Opinions or preferences will not receive a formal response; however, they will be considered and included as part of the BLM decision making process.

This Final EIS was prepared pursuant to the National Environmental Policy Act and applicable regulations, and other applicable statues, to address possible environmental and socioeconomic impacts that could result from this leasing action. This Final EIS is not a decision document. Its purpose is to inform the public and the agency decision makers of the impacts of leasing a tract of federal coal to an existing mine in Mercer County, North Dakota and to evaluate alternatives to leasing the coal.

R 8-22-05

Comments, including names and street addresses of respondents, will be available for public review at the address listed below during regular business hours (7:45 a.m. - 4:30 p.m.), Monday through Friday, except holidays, and will be published as part of the Final EIS. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public view or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representative or officials of organizations or businesses, will be made available for public inspection in their entirety.

Please send written comments to the Bureau of Land Management, North Dakota Field Office, Attn: Allen Ollila, 2933 Third Avenue West, Dickinson, ND 58601-2619. Written comments may also be emailed to the attention of Allen Ollila at mtndfo@blm.gov. E-mail comments must include the name and mailing address of the commenter to receive consideration. Written comments may also be faxed to (701) 227-8510.

If you have any questions or would like to obtain additional copies of this Final EIS, please contact Allen J. Ollila or Lonny R. Bagley at (701) 227-7700 or at the above address.

Lonny R. Bagley
North Dakota Field Office Manager

FINAL ENVIRONMENTAL IMPACT STATEMENT

FES 05-03

The Coteau Properties Company

Federal Coal Lease by Application NDM 91535

For

West Mine Area, Freedom Mine, Mercer County, North Dakota

Prepared by

The Bureau of Land Management, North Dakota Field Office

In Cooperation with

The Office of Surface Mining Reclamation and Enforcement,
Denver, Colorado

July, 2005

THE COTEAU PROPERTIES COMPANY
FINAL ENVIRONMENTAL IMPACT STATEMENT

Abstract

Lead Agency: Bureau of Land Management, U.S. Department of the Interior

Cooperating Agency: Office of Surface Mining Reclamation and Enforcement

For Further Information Contact:, Bureau of Land Management, North Dakota Field Office, 2933 3rd Ave. W., Dickinson, ND 58601 (701) 227-7713 [e-mail: MTNDFO@blm.gov]

Proposed Action: The Coteau Properties Company applied for 5,571 acres of federal coal beneath private surface in Mercer County, North Dakota.

Abstract: This EIS analyzes the environmental consequences of three federal coal management alternatives. The analysis was based on resource issues and concerns identified during previous coal leasing analyses and public scoping conducted for this application. Potential concerns include impacts to air quality, water resources, soils, land use, vegetation, wildlife, cultural resources, environmental justice and socioeconomics. Analysis of cumulative impacts addresses ongoing surface mining at the Freedom Mine, Mercer County, North Dakota.

The Proposed Action (Alternative A) considers leasing tracts as requested in the lease application. The Coteau Properties Company filed an application to acquire federal coal as maintenance tracts under federal coal regulations at 43 CFR 3425, Leasing By Application. Under Alternative A, the BLM would lease the requested 5,571 acres of federal coal beneath private surface. The lease tracts would be subject to standard and special lease stipulations. The coal (an estimated 93 million tons of federal lignite) would complement reserves of the Freedom Mine.

The No Action Alternative (B) would reject the coal lease application. Federal tracts would not be leased although existing private and state leases at the Freedom Mine would be developed according to approved mining and reclamation plans (ND PSC Surface Coal Mining Permit NACT-201).

Alternative C (Modified Leasing) considers holding a competitive sale of federal coal, leasing 5,334 acres, and providing added measures to protect and preserve cultural resources in the proposed permit area.

Alternative C is the preferred alternative.

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ABBREVIATIONS AND ACRONYMS USED IN THIS REPORT

BLM	Bureau of Land Management
BP	Before Present
CFR	Code of Federal Regulations
CMS	Cultural material scatter
CO	Carbon monoxide
DOI	Department of Interior
dv	Deciview, a measure of view impairment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
F	Fahrenheit
ft	Foot, feet
FWS	U.S. Fish and Wildlife Service
GIS	Geographic Information Systems
HABS/HAER	Historic American Building Survey/Historic American Engineering Record
HAP	Hazardous Air Pollutant
IMPROVE	Interagency Monitoring of Protected Environments
MLA	Mineral Leasing Act of 1920
NAAQS	National Ambient Air Quality Standards
NDAAQS	North Dakota Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NEPA	National Environmental Policy Act of 1969
NO_2	Nitrogen dioxide
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
O_3	Ozone
OSM	Office of Surface Mining Reclamation and Enforcement
PAP	Permit Application Package, as submitted to PSC
$PM_{2.5}$	Particulates finer than 2.5 microns in diameter
PM_{10}	Particulates finer than 10 microns in diameter
PSD	Prevention of significant deterioration
PVT	Private (Fee)
PSC	Public Service Commission, State of North Dakota
RMP	Resource Management Plan
SHPO	State Historic Preservation Office
SHSND	North Dakota Comprehensive Plan for Historic Preservation
SIP	State Implementation Plan
SMCRA	Surface Mining Control and Reclamation Act of 1977
SO_2	Sulfur dioxide
TCP	Traditional Cultural Property
T&E	Threatened and Endangered
THPO	Tribal Historic Preservation Office
TRNP	Theodore Roosevelt National Park
WMA	West Mine Area (permit area analyzed in this document)

SUMMARY

This Environmental Impact Statement (EIS) identifies and analyzes potential environmental effects that could result from leasing tracts of federal coal within the Freedom Mine West Mine Area, Mercer County, North Dakota. The mine operator (The Coteau Properties Company) filed an application to acquire federal coal as maintenance tracts under federal coal regulations at 43 CFR 3425, Leasing By Application.

The purpose of this EIS is to disclose potential environmental and socioeconomic impacts from leasing and mining federal coal in the West Mine Area (WMA), Mercer County, North Dakota. The need is to acquire federal coal reserves to be mined in conjunction with adjacent private and state reserves resulting in conservation of the coal resource and to supply existing contracts.

The Bureau of Land Management (BLM) prepared this EIS to evaluate site-specific and cumulative environmental and socioeconomic impacts within and around the approved permit area. Although BLM does not authorize coal mining (which is regulated by the State of North Dakota and Federal Office of Surface Mining), impacts of mining are considered because they are a logical consequence of issuing a coal lease.

BLM will use the EIS to decide whether to hold a lease sale and issue a lease for federal coal in the proposed permit area. The sale would be open to any bidder, not only the applicant. A federal coal lease would be issued to the highest bidder as long as a committee determines that the high bid meets the fair-market value of the coal.

The following items are briefly noted:

Private and state coal reserves within the WMA have been permitted by the North Dakota Public Service Commission for mining by The Coteau Properties Company (ND PSC Surface Coal Mining Permit NACT-0201).

The Office of Surface Mining (OSM) is a cooperating agency on this EIS and will use the findings to make decisions related to mining the tracts, if leased.

Lands in the approved permit area were subject to four coal-planning screens and determined as acceptable for consideration for leasing.

Scoping was conducted from March 6, 2003, through April 7, 2003. A Notice of Scoping and Notice of Intent to Prepare an EIS was published in the *Federal Register* on March 6, 2003. Over 190 letters were mailed to interested parties on March 11, 2003.

The Leasing By Application process is, by law and regulation, an open, public, competitive, sealed-bid process. The applicant may or may not be the successful high bidder. This analysis (EIS) assumes the applicant would be the successful bidder and that each tract would be mined as a maintenance tract for the Freedom Mine.

The major coal seam within the permit area is the Beulah-Zap bed, which is 15-22 feet thick, except near the edges of glacial diversion channels. The coal bed dips west at less than one degree and lies beneath overburden ranging from a few feet on the east to nearly 200 feet on the western border.

This EIS analyzes Coteau's Proposed Action and two alternatives for managing federal coal. The Proposed Action (Alternative A) considers leasing the tracts as requested in the lease application. Alternative B (No Action) considers rejecting the lease application, although existing private and state leases at the Freedom Mine would be developed according to approved mining and reclamation plans. Alternative C considers leasing less acres while providing added protection and preservation to cultural resources.

Critical elements of the human environment that could be affected by the Proposed Action include: cultural resources, American Indian concerns, threatened and endangered species, air quality, water quality, prime and unique farmland, invasive nonnative species, wetlands/riparian zones, and environmental justice. Five critical elements, including: Areas of Critical Environmental Concern, wilderness, floodplains, wild and scenic rivers, and hazardous wastes, are not present in the permit area and are not addressed. In addition to critical elements, the EIS discusses potential impacts on soils, alluvial valley floors, vegetation, wildlife, land use, and socioeconomics.

There would be significant impacts on cultural resources under all three alternatives. Because the surface is privately owned and the federal coal reserves are not contiguous, ancillary activities associated with mining would destroy a significant number of prehistoric American Indian stone features whether or not federal coal is leased. Through consultation with tribal representatives, it was determined that mining of the coal would affect the Hidatsa, Mandan, Arikara, Sioux, and Assiniboine. These tribes have well-documented historic ties to the area.

Alternative C, the preferred alternative, incorporates a preservation component for the American Indian stone features. Developed out of tribal consultations, in this alternative the lessee sets aside in trust approximately 1,240 acres, 8 National Register eligible Historic Properties, 191 stone rings, 80 stone cairns, nine stone alignments, one stone effigy and several unmarked burials and provides access to these features for all tribal people. The lessee would also donate a substantial monetary amount to the trust. The alternative also provides for investigations of the archeological information contained in the remaining features.

Leasing would extend the projected lifetime of Freedom Mine without an annual increase in production. Economic stability would be maintained in the communities in this area without placing additional demands on the existing infrastructure or services.

1.0 PURPOSE OF AND NEED FOR ACTION

This EIS analyzes effects anticipated from leasing federal coal at the West Mine Area, Freedom Mine, Mercer County, North Dakota (see Figure 1.1).

Acquiring federal coal would be part of Coteau's plan to keep the Freedom Mine operating into the 2030s.

1.1 PURPOSE AND NEED FOR ACTION

On January 16, 2002, Coteau filed an application with BLM to lease federal coal deposits beneath private surface at the following locations:

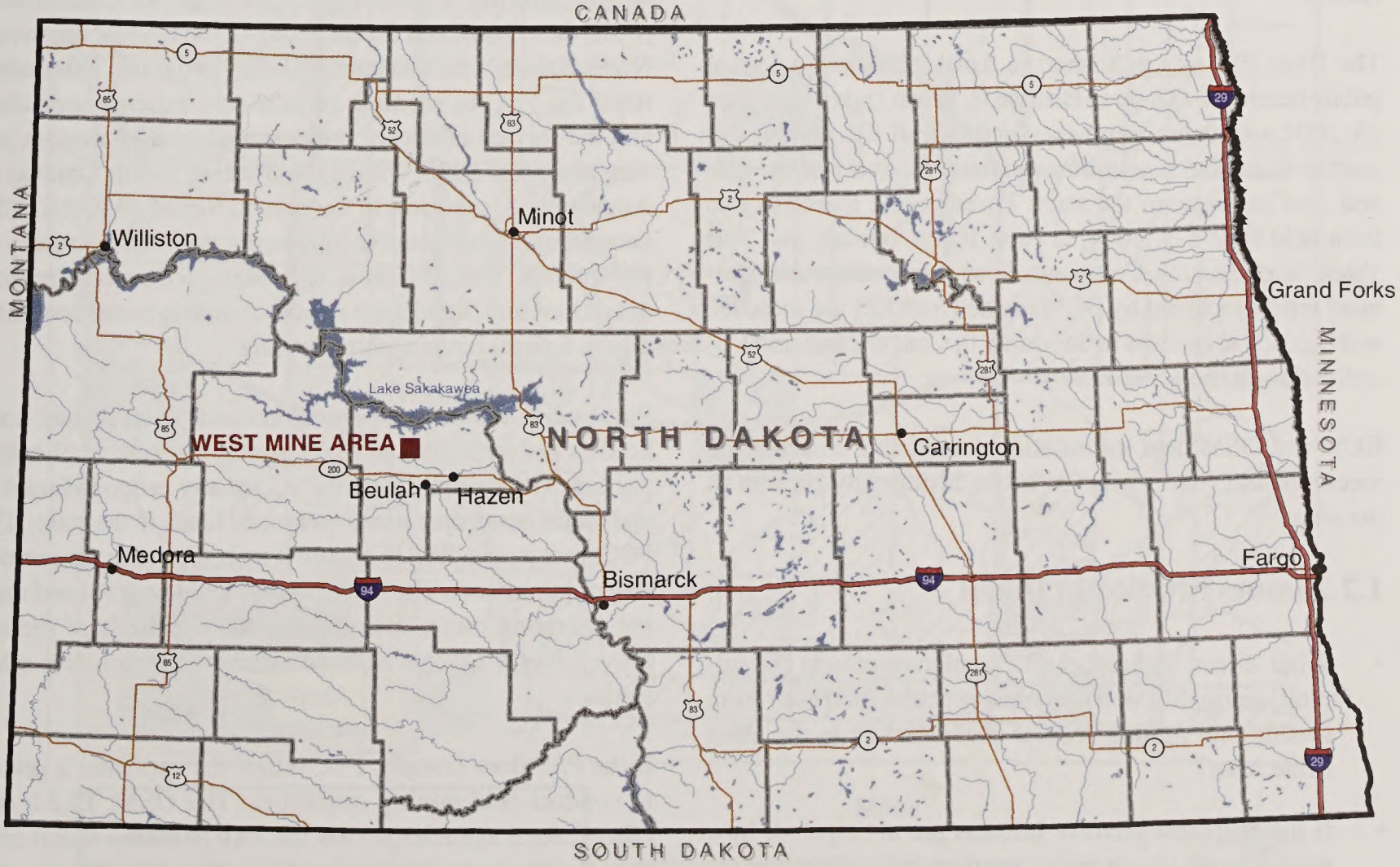
T. 144 N., R. 88 W., 5th P.M.
Sec. 2: Lots 3, 4, S½NW¼
Sec. 4: Lots 1, 2, S½NE¼, S½
Sec. 6: Lots 1-7, S½NE¼, SE¼NW¼, E½SW¼, SE¼
Sec. 8: N½NE¼, SE¼NE¼, NW¼, N½SW¼

T. 144 N., R 89 W., 5th P.M.
Sec. 12: E½

T. 145 N., R. 88 W., 5th P.M.
Sec. 4: Lots 1, 2, 3, 4, S½N½, SE¼, S½SW¼
Sec. 10: N½
Sec. 14: All
Sec. 22: All
Sec. 26: N½NE¼, SW¼NE¼, NW¼SE¼, W½
Sec. 28: E½NE¼, SW¼NE¼, SE¼NW¼, S½
Sec. 34: N½N½, SE¼NE¼, E½SE¼, SW¼SE¼, SW¼.

5, 571 acres federal coal, Mercer County, North Dakota.

Figure 1.1
West Mine Area, Mercer County, North Dakota



Coteau proposes to lease the above-listed tracts as part of a 17,051-acre expansion, the West Mine Area (WMA) of the Freedom Mine (Figure 1.2). The need is to acquire federal coal reserves to be mined along with adjacent private and state reserves. Coteau would (1) maintain annual production at the current rate of 15-16 million tons/year; (2) meet existing contracts (3) conserve the coal resource.

1.2 SCOPE OF THE ANALYSIS

Leasing of federal coal reserves is analyzed at the local (field office) level. Information on anticipated activities and impacts are considered appropriate for the scope of the Proposed Action and the likely environmental impacts of the operation.

1.2.1 History of Scoping and Public Participation

Scoping began on March 6, 2003, when BLM published a Notice of Intent to prepare a NEPA document in the *Federal Register.*

The project leader sent over 190 letters to interested parties on March 11, 2003. The letters explained Coteau's proposal and asked for issues and comments regarding the Proposed Action.

The Draft EIS was published in April 2004, and a formal public hearing was held in Bismarck, North Dakota, on June 23, 2004, to receive comments on the Draft EIS and the fair market value and maximum economic recovery of the federal coal resource in the tract. Three public meetings had been held June 1-3, 2004, at New Town, Beulah, and Fort Yates, North Dakota. Comments from the meetings and comment letters received by BLM on the Draft EIS are included with agency responses in Section 5.0, Consultation and Coordination of the Final EIS.

BLM and OSM held informational and tribal consultation meetings and field visits for tribes historically present in the area.

1.2.2 Issues Studied in Detail

- What direct, indirect, and cumulative effects on cultural, air quality, and other resources would result from leasing and mining federal coal reserves in the West Mine Area?
- If unacceptable adverse impacts are anticipated, how might such impacts be minimized, mitigated or avoided?
- What environmental and socioeconomic effects would likely occur if federal coal tracts were not leased?

1.3 DECISIONS TO BE MADE

BLM must decide whether to grant a lease for federal coal reserves in the West Mine Area.

BLM must decide whether to (1) hold a competitive, sealed-bid lease sale for the tracts as applied for, (2) reject the lease application and offer no tracts in the WMA at this time, or (3) hold a competitive sealed-bid lease sale for a modified tract configuration with stipulations to protect and preserve cultural resources.

The Office of Surface Mining Reclamation and Enforcement (OSM), a cooperating agency on this EIS, must recommend (1) approval, (2) approval with conditions, or (3) disapproval of the mining plan (if leased) that a successful bidder would submit.

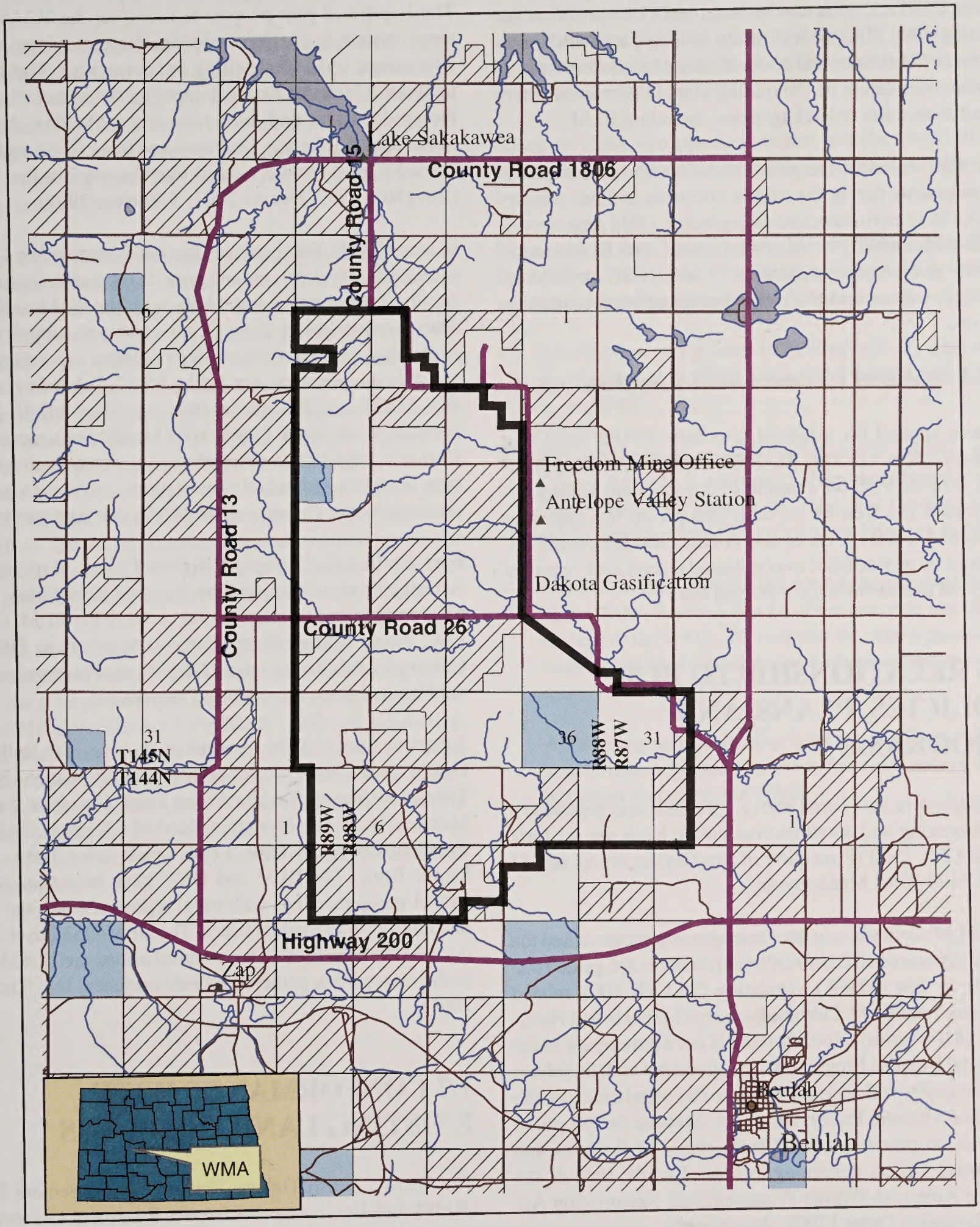
1.4 REGULATORY AUTHORITY AND RESPONSIBILITY

The Surface Mining Control and Reclamation Act of 1977, as amended (SMCRA), gives OSM primary responsibility to administer programs that regulate surface coal mining operations and the surface effects of underground coal mining operations in the United States. Pursuant to Section 503 of SMCRA, the North Dakota Public Service Commission (PSC) developed, and the Secretary of the Interior approved, North Dakota's permanent regulatory program. This authorized the PSC to regulate surface coal mining operations and the surface effects of underground coal mining on private and state lands within the State of North Dakota. In August 1983, pursuant to Section 523(c) of SMCRA, PSC entered into a cooperative agreement with the Secretary of the Interior. The PSC now regulates surface coal mining operations and the surface effects of underground coal mining on federal lands within the state.

Pursuant to the cooperative agreement, federal coal lease holders in North Dakota must submit a permit application package (PAP) to OSM and PSC for any proposed mining and reclamation operations on federal lands in the state. The PSC reviews the PAP to ensure it complies with the permitting requirements. The PSC also ensures the proposed mining operation meets the performance standards of the approved North Dakota state permanent program and other statutes.

If the PAP does comply, PSC issues the applicant a permit to conduct coal mining operations. The OSM, BLM, and other federal agencies review the PAP to ensure that it contains the necessary information for compliance with the coal lease; the Mineral Leasing Act of 1920, as amended (MLA); the National Environmental Policy Act of 1969, as amended (NEPA); National Historic Preservation Act of 1966, as

Figure 1.2
West Mine Area showing location of federal coal tracts
No federally administered lands



amended (NHPA); and other applicable federal laws and their attendant regulations.

The OSM recommends to the Assistant Secretary of the Interior, Land and Minerals Management (1) approval of the mining plan, (2) approval of the mining plan with conditions, or (3) disapproval of the mining plan. Before making a recommendation on the mining plan, OSM would obtain input from other federal agencies, including BLM.

The PSC enforces the performance standards and permit requirements during the mine's operation and has primary authority in environmental emergencies. OSM retains oversight responsibility of this enforcement. The BLM has authority in emergency situations in which PSC or OSM inspectors cannot act before environmental harm or damage occurs.

1.4.1 Status of Coteau's WMA Application

Coteau applied for a federal coal lease (NDM 91535) in January 2002. On May 31, 2002, Coteau filed an application with the PSC for a permit to conduct coal mining operations in the West Mine Area. That permit was approved on April 14, 2004; Coteau may conduct surface mining operations on private lands over unleased federal coal; approval does not include mining of federal coal.

1.5 RELATIONSHIP TO BLM POLICIES, PLANS, AND PROGRAMS

In addition to acts listed above, guidance and regulations for managing and administering public lands are set forth in 40 CFR 1500 (Protection of the Environment) and 43 CFR 3400 (Coal Management).

The BLM's cultural resource management program and the consideration of effects to cultural resources are guided primarily by law (NHPA), regulation (36 CFR 800), related guidance, and BLM Cultural Resource Manuals and Handbook (8100 series). North Dakota is not a participant in the National Cultural Programmatic Agreement and, therefore, must comply with current Section 106 regulations of the National Historic Preservation Act. Because the proposed lease is on privately owned lands many of the laws and Executive Orders pertaining to federal lands, such as the Native American Graves Protection and Repatriation Act and Executive Order 13007, do not apply.

1.6 SCOPING AND AMERICAN INDIAN CONSULTATION

The imprint of past peoples is found on the WMA landscape mainly in the form of stone features: rings, cairns, alignments, and a single effigy and petroglyph. These stone features, which dot the landscape, mark locations used by the predecessors and ancestors of the Mandan, Arikara, Hidatsa, and, later, the Yanktonai and other Sioux and other nomadic groups who moved into the area in the 1700s (Boughton 1999; Deaver 2001; Schneider 1994).

In June of 2000, Ethnoscience, Inc. was contracted by Coteau to conduct investigations and provide recommendations regarding Traditional Cultural Values for the WMA and adjacent mine extension areas. That report was completed in September of 2001 (Deaver 2001). Tribal representatives had conversations concerning the WMA with federal agencies, SHPO, and PSC earlier that year. On April 11, 2000, Standing Rock Sioux Tribe's THPO facilitated a meeting in Bismarck, beginning a series of meetings/consultation meetings, site visits, individual consultations, conversations, and correspondence concerning the WMA that continue today.

Fort Berthold's Three Affiliated Tribes, Fort Peck's Assiniboine and Sioux, and the Standing Rock Sioux Tribe have participated in consultation, as have the BLM, OSM, PSC, North Dakota State Historic Preservation Officer, Coteau, the Advisory Council On Historic Preservation and the National Trust for Historic Preservation.

American Indian Tribes consulted include Fort Belknap, Oglala Sioux Tribe, Rosebud Sioux Tribe, Santee Sioux Tribe of Nebraska, Yankton Sioux Tribe, Flandreau Santee Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Northern Cheyenne Tribe, Crow Creek Sioux Tribes, and Lower Brule. The BLM and OSM have held over seven formal group meetings with tribal representatives and four meetings with individual tribes. The BLM/OSM have conducted two field tours. These consultations are in addition to the information gathered by Ethnoscience, Inc. (Deaver 2001).

1.7 CONFORMANCE WITH EXISTING LAND USE PLANS

The BLM's North Dakota Resource Management Plan (RMP) and Environmental Impact Statement (Record of Decision signed April 1988) employed four land-use-planning screens for federal coal: (a) coal development potential, (b) unsuitability criteria, (c) multiple-use tradeoffs, and (d) surface-owner consultation. Screening ensures that leasing conforms to the North Dakota Field Office RMP.

The interdisciplinary team revisited the land use planning screens after receiving Coteau's lease application. One unsuitability criterion and one multiple-use tradeoff were addressed after reviewing Coteau's application.

The North Dakota RMP originally evaluated alluvial valley floors (AVF) for Coal Study Areas. Portions of Sections 26 and 28, T. 145 N., R. 88 W., in the WMA were identified as preliminary alluvial valley floors in a 1983 study. Based on that study, areas designated as preliminary alluvial valley floors were excluded from further consideration for coal leasing in the 1988 RMP.

Current North Dakota surface coal mine regulations require companies to make an alluvial valley floor determination and submit such findings to the North Dakota Public Service Commission. The PSC makes a determination on the existence of an Alluvial Valley Floor prior to mine-permit application. Coteau conducted an Alluvial Valley Floor study for the WMA, which includes contiguous downstream areas that could be affected by surface mining activities. No Alluvial Valley Floors were found in the West Mine Area or adjacent areas, which includes all nominated federal coal tracts. The PSC concurred with Coteau's determination. Therefore, the BLM completed a maintenance action for the RMP, removing the "unsuitable designation" for sections originally considered to be alluvial valley floors.

Portions of Sections 4, 22, 28, T. 145 N., R. 88 W., had federal coal excluded from consideration for leasing under the "Steep Slope Multiple-Use Tradeoff" in the North Dakota RMP. Alternative C, the RMP's selected alternative, stated that concentrations of steep slopes (generally areas of 40 acres or more with slopes at or greater than 30 percent) would be excluded from further consideration for coal leasing. During the 1988 analysis, technological capability did not allow for a thorough analysis of each parcel under consideration.

These areas should not have been designated as "excluded from further consideration for leasing" because of steep slopes. Geographic Information System analysis shows locales with slopes greater than 30 percent in WMA are small and widely scattered with no individual areas of 40 acres in size. Therefore, the BLM completed an RMP maintenance action, which removed steep-slope designation for all areas over federal coal in the WMA.

Based on these two planning screen modifications, BLM has determined the entire WMA is considered suitable for leasing.

Planners with the City of Beulah, Mercer County, Standing Rock Sioux Tribe, and The Three Affiliated Tribes were contacted regarding plans for the WMA:

- John Phillips, city planner for Beulah, ND, reported that the City has no conflicts and no plan that extends as far as the WMA.

- Richard Sorenson, planner for Mercer County, ND, said Coteau brought a proposal before the Planning and Zoning Board on January 23, 2003. The County Commissioners approved Coteau's plan on February 4, 2003.

- Del LeCompte, land coordinator for the Standing Rock Sioux Tribe, reported that he is not aware of any plans that cover the WMA. He said that the tribe's plans deal largely with land consolidation and management on the reservation.

- Anet Youngbird, realty specialist for the Three Affiliated Tribes, reported the tribes have no current land use plans that cover the WMA.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 HISTORY OF ALTERNATIVE DEVELOPMENT

The alternative development process began in February 2003 when the decision to prepare an EIS was made. Alternative development was initiated with a series of interdisciplinary team meetings. The team developed three alternatives within constraints imposed by existing policy and guidance.

The Proposed Action (Alternative A) is to hold a competitive lease sale for federal coal tracts in the WMA as proposed by the applicant. The Proposed Action assumes the applicant (Coteau) would be the successful bidder and that tracts would be mined as a maintenance lease for the Freedom Mine.

The No Action (Alternative B) assumes the lease application would be rejected and federal tracts withheld from leasing. Some 11,480 acres (about 60 percent) of the WMA is underlain by non-federal coal, which could be mined even if federal coal is not leased. Mining of non-federal coal could have substantial impacts on private surface lands above federal coal.

The modified leasing alternative (C) considers ways of preserving, mitigating, and minimizing impacts to cultural resources that are meaningful to American Indian tribes of the Great Plains and the historic preservation community. Alternative C has been modified since the release of the DEIS in April of 2004 because of the inability to acquire certain lands referenced in the DEIS for donation to North Dakota's Indian Cultural Education Trust. The modification was developed in continued consultation with Coteau, the North Dakota State Historic Preservation Office, The Advisory Council on Historic Preservation, the Three Affiliated Tribes, Fort Peck Assiniboine and Sioux, and the Standing Rock Sioux Tribe as part of National Historic Preservation Act compliance for this undertaking.

2.2 MANAGEMENT COMMON TO ALL ALTERNATIVES

Coteau would mine non-federal coal of the WMA, including some 11,480 acres of private and state-owned reserves. Historic Properties affected by coal mining would be mitigated under North Dakota state law (North Dakota Century Code) in concert with SMCRA requirements.

Through year 2000, approximately 220 million tons of lignite coal had been removed from the Freedom Mine, averaging 15-16 million tons/year. Surface disturbances associated with coal extraction are present as follows:

- Previously mined area (to year-end 2002): 16,400 acres
- Active mine area (at year-end 2002): 3,106 acres
- Area completely reclaimed (year-end 2002): 8,425 acres
- Area mined and regraded without respread soil (at year-end 2002): 404 acres
- Areas in long-term use, including office/shop, coal handling, haul roads, stockpiles, and ponds (to year-end 2002): 4,465 acres

BLM would comply with laws, regulations, acts, executive orders, policy, and formally-adopted agreements as described in sections 1.4 and 1.5.

2.3 ALTERNATIVE A (PROPOSED ACTION)

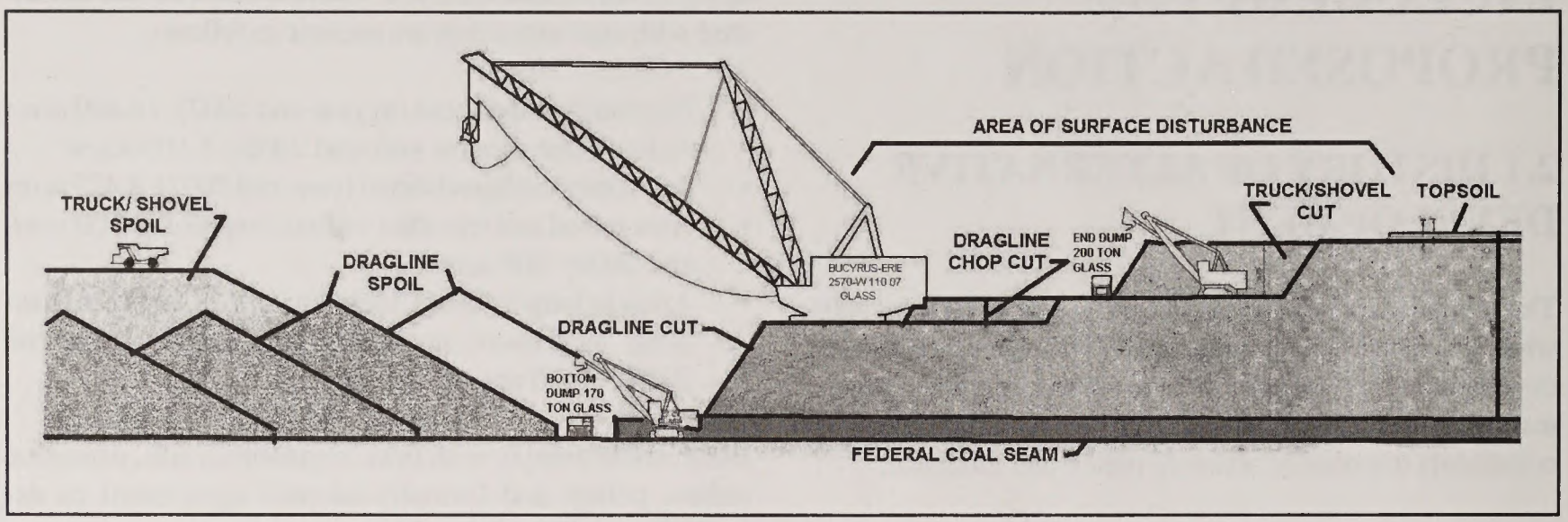
Coteau proposes to lease 5,571 acres of federal coal beneath private surface in Mercer County, North Dakota. The coal (an estimated 93 million tons of federal lignite) would complement reserves of the Freedom Mine. Lease tracts would be subject to standard and special lease stipulations developed for this sale. Under this action, a Traditional Cultural Property (turtle effigy) and a recorded unmarked burial would not be disturbed. To abide by the NHPA, as amended, 14 Historic Properties located over federal coal would be avoided or mitigated for their potential to yield scientific contributions to prehistory. One Historic Property will receive HABS/HAER documentation, and archeological investigations are planned on 26 Historic Properties located over non-federal coal within the WMA, and a total of 780 acres will be avoided by mining activities.

2.4 ALTERNATIVE B (NO ACTION)

Under Alternative B the application to lease federal coal would be rejected and federal coal reserves bypassed during mining. Private surface over federal coal would still be affected (for example, by highwall layback, topsoil stockpiles, haul roads and other activities) as 11,480 acres of non-federal coal are mined.

The most severe surface impacts would occur in a 500-foot wide zone lying adjacent to the highwall (Figure 2.1). Mining would directly affect some 250 acres (roughly 40 percent of a 640-acre section) of surface surrounded on all sides by an open pit.

Figure 2.1
Private Surface Above Federal Coal That is Not Mined



Analysis of an unleased federal section, situated adjacent to an open pit, indicates that approximately one-half of the section would experience direct impacts. Another 40 percent would experience indirect impacts (roads, topsoil piles), while approximately 10 percent would remain undisturbed. Figure 2.2 indicates potential impacts that could occur on unleased lands adjacent to the mining operation.

Historic Properties located on private and state land would be mitigated under the North Dakota Century Code in concert with the requirements of SMCRA as set forth in the North Dakota coal program. All Historic Properties would remain in private ownership and use. The only recorded unmarked burial would be protected from disturbance under North Dakota Century Code (Citation: §23-06-27, Section Title: Protection of human burial sites, human remains and burial goods).

2.5 ALTERNATIVE C (MODIFIED LEASING)

Federal coal would be leased (5,334 acres) with additional protections for cultural resources above those provided in the Proposed Action. Following the Cultural Resource Programmatic Agreement and its approved Management Plan for the WMA, 860 acres of the WMA would be declared off-limits to surface disturbance by mining impacts. By agreement with Coteau, who also controls the surface, 240 acres of federal coal located beneath the W1/2 of Section 4, T. 145 N., R. 88 W., would be removed from the lease application. Within the remaining 5,334 acre lease proposal, BLM would offer for lease and stipulate no surface disturbance to 81 acres within Section 22, T. 145 N., R. 88 W., to protect 32ME1513; similarly, four acres in Section 14, T. 145 N., R. 88 W., would be offered for lease, but with a stipulation to protect the only recorded Traditional Cultural Property (effigy). Also, to avoid additional significant cultural sites within the WMA, there would be no surface disturbance to 535 acres in Section 9, T. 145 N., R. 88 W., and the 240 acres in the W 1/2 of Section 4, T. 145 N., R. 88 W., already removed from the lease application.

This alternative also includes a donation of lands and monies by the lessee to a recently established North Dakota's Indian Cultural Education Trust (Trust). The Trust was established for the purpose of generating income to benefit Indian cultural education. By donating lands to the Trust, a segment of the cultural landscape and the archeological sites they contain would be preserved. These sites, which would be transferred from private ownership into the Trust, would become readily-accessible to tribal peoples.

Donor agreement(s) would provide a donation by the lessee of approximately 1,240 acres and a substantial monetary amount into the Trust. Eight Historic Properties, 191 stone rings, 80 stone cairns, nine rock alignments, and two stone-lined depressions and the Traditional Cultural Property and 525 acres of cultural landscape would be preserved. Also, seven Historic Properties, 116 stone rings, 35 stone cairns, one rock alignment, and three artifact scatters would be avoided by mining planned within the WMA.

2.6 SUMMARY COMPARISON OF ALTERNATIVES

See Tables 2.1 through 2.3 and Figure 2.3.

2.7 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

Alternative C is the Preferred Alternative.

Figure 2.2
Hypothetical Impacts on an Unleased Federal Coal Tract

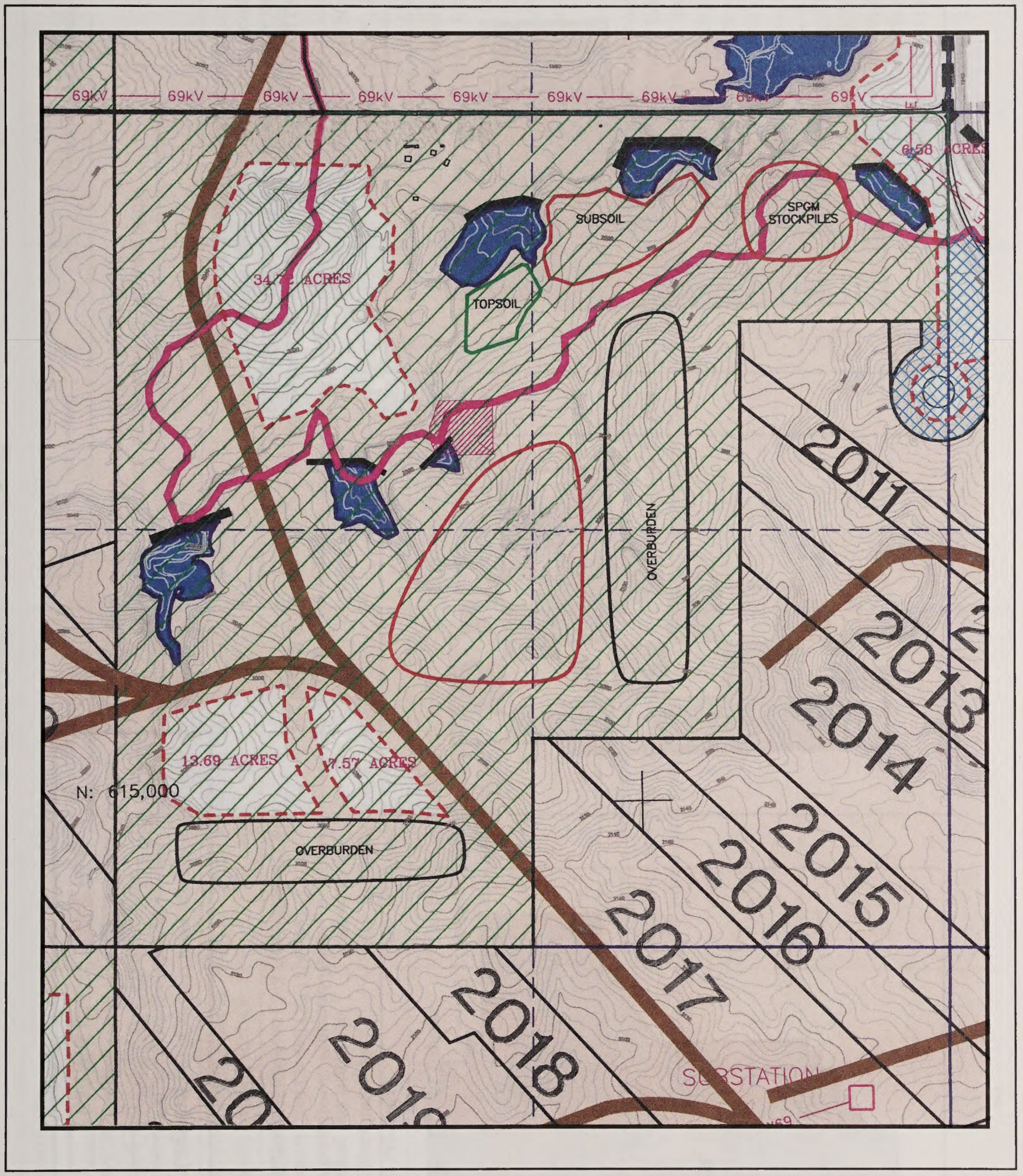
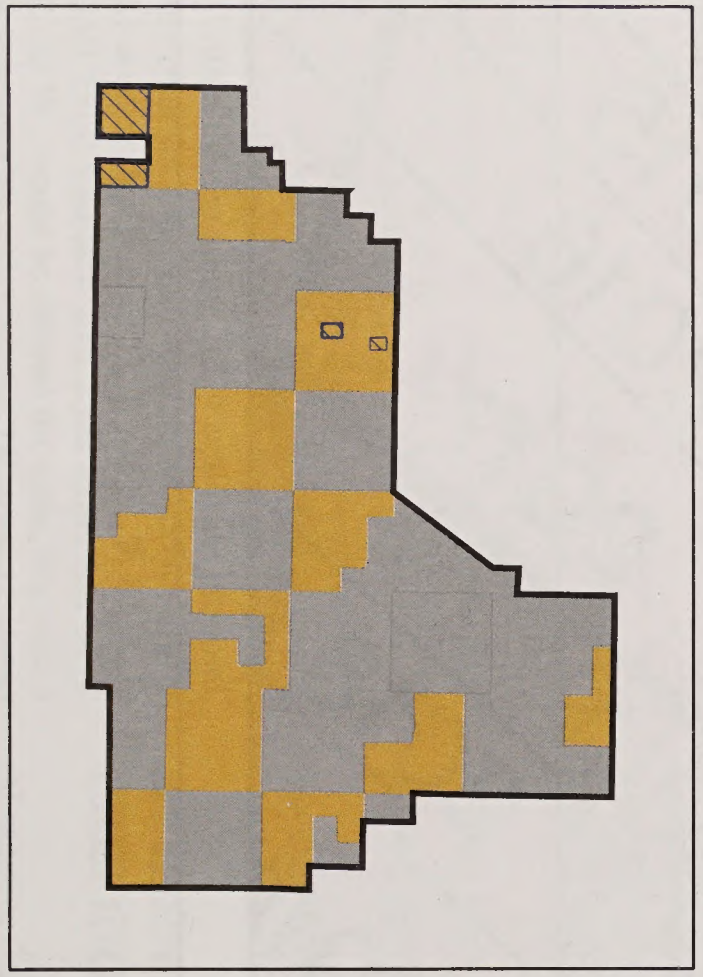
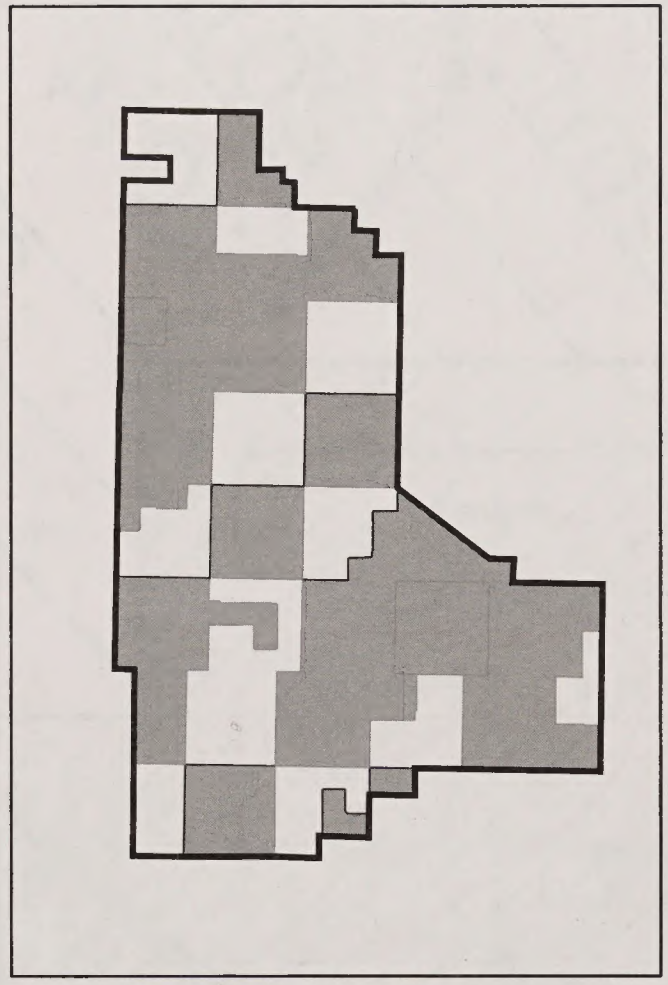


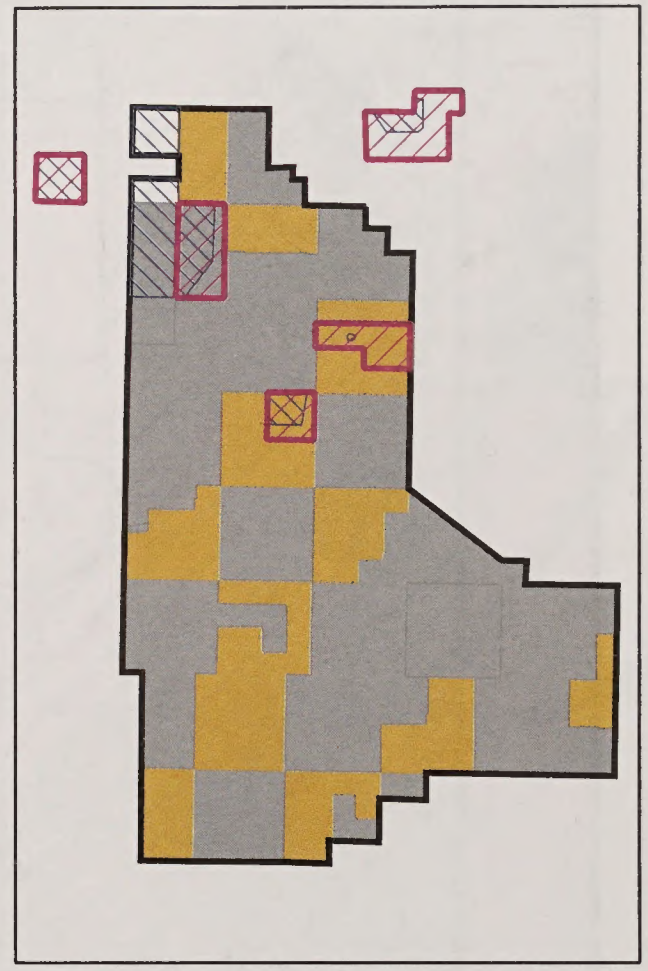
Figure 2.3
Comparison of Impacts According to Alternative



Alternative A, Proposed Action
Federal Coal Leased (5,571 Acres)
No Surface Disturbance Stipulated (248 Acres Federal Coal)



Alternative B, No Action
No Federal Coal Leased



Alternative C, Preferred
Federal Coal Leased (5,334 Acres)
No Surface Disturbance WMA (325 Acres Federal Coal)
No Surface Disturbance WMA (860 Acres ALL Coal)
No Surface Disturbance Cultural Trust (1085 Acres)
Cultural Trust Areas (1,240 Acres Total)

Legend

- Cultural Trust Area
- No Surface Disturbance
- West Mine Area

LEASED COAL

- Private or State
- Federal

No warranty is made by the BLM for the use of the data for purposes not intended by the BLM

Table 2.1
Summary Comparison of Alternatives

Indicator/Action	Alternative A Proposed Action	Alternative B No Action	Alternative C Modified Leasing
Management in Common: · 11,480 acres of non-federal coal would be mined. · Historic Properties affected by coal mining would be mitigated under the North Dakota Century Code in concert with SMCRA requirements. · Federal coal leases would be subject to standard and special lease stipulations.			
Acres/Estimated reserves of federal coal leased beneath private surface	5, 571 acres/ 90 million tons	0 acres/ 0 tons	5,571 acres/ 90 million tons
Federal coal withdrawn from leasing	0 acres	5,571 acres	0 240 acres/1.9 million tons
Federal coal leased but subject to "No Surface Disturbance" to protect cultural resources	248 acres in Sec. 4, T145N, R88W, and Sec. 14, T145N, R88W	0 acres	4 acres in Sec. 14, T. 145 N., R. 88 W. 81 acres Sec. 22, T. 145 N., R. 88 W.
Historical Properties over federal coal	5 properties would be avoided; 9 properties would be investigated for their information value.	5 properties would be avoided; 9 properties would be investigated for their informational value.	3 properties would be donated to the ND State Indian Cultural Education Trust (includes Bee's Nest site which is outside of the WMA); 3 properties would be avoided; 9 properties would be investigated for their informational value.
Historical Properties over non-federal coal	8 properties would be avoided; 19 properties would be investigated for their information value.	8 properties would be avoided; 19 properties would be investigated for their information value.	5 properties would be donated to the ND State Indian Cultural Education Trust (includes portion of the Boeckel-Renner site which is outside of the WMA); 4 properties would be avoided; 19 properties would be investigated for their information value.
Additional Compensation for cultural-resource losses.	None.	None.	1,240 acres with access and $425,000 donated to the Indian Education Trust. Includes 525 undisturbed acres holding 8 Historic Properties with 282 stone features and the only Traditional Cultural Property.

Table 2.2
Summary Comparison of Direct and Indirect Impacts

Description of Potential Impacts by Resource	Magnitude and Duration of Impact	
Resource Name	**No-Action Alternative (B)**	**Proposed Action (A) and Alternative C**
Air Quality		
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Elevated concentrations of particulate matter	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Elevated concentrations of gaseous emissions	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Water Resources		
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Surface Water		
Disruption of surface drainage systems	Moderate, short term on active mine area	Same as No Action on expanded mine areas
Increased runoff and erosion rates	Moderate, short term near active mine area	Same as No Action on expanded mine areas
Ground Water		
Removal of shallow aquifers	Moderate, short term on active mine area	Same as No Action on expanded mine areas
Replacement of shallow aquifers with spoil aquifers	Moderate, long term on disturbed areas	Same as No Action on expanded mine areas
Depressed water levels in aquifers adjacent to mine	Moderate, short term near active mine area	Same as No Action on expanded mine areas
Change in groundwater quality in backfilled areas	Moderate, long term near active mine area	Same as No Action on expanded mine areas
Soils		
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Loss of soil productivity	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Soil instability and increased erosion	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Disturbance of prime farmland	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Land Use/Vegetation		
PROGRESSIVE LOSS OF NATIVE VEGETATON would result in:		
Increased erosion	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Wildlife and livestock habitat loss	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Wildlife habitat carrying-capacity loss	Moderate, short term on active mine areas	Same as No Action on expanded mine areas

Description of Potential Impacts by Resource	Magnitude and Duration of Impact	
Resource Name	**No-Action Alternative (B)**	**Proposed Action (A) and Alternative C**
AFTER RECLAMATION the following could result:		
Changes in vegetation patterns	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Reduction in vegetation diversity	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Wildlife		
DURING MINING the following could occur:		
Wildlife displacement	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Temporary displacement of mammals, amphibians, reptiles, and birds	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Loss of habitat for migratory birds including neo-tropical migrants	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Temporary displacement in waterfowl/migratory bird nesting habitat	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Temporary wildlife habitat loss	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Continued road kills by mine-related traffic	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Cultural		
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Loss of 91 sites (14 are NR eligible); 624 stone features (rings, cairns, and alignments); and 5,323 acres of cultural landscape.	Major, long term on active mine areas	Same as No Action on expanded mine areas Under Alternative C (Preferred) 8 Historic Properties, 280 stone features, 1,240 acres and $425,000 are placed in the Indian Cultural Education Trust as an offset to impacts.
Environmental Justice		
EFFECTS DURING MINING would include:		
(See Cultural impacts)	See Cultural impacts	See Cultural impacts
Socio-economics		
EFFECTS DURING MINING would include:		
Employment Potential (no additional jobs in mine are expected)	Moderate, long term on existing mine area	Same as No Action on expanded mine areas

Table 2.3
Summary Comparison of Magnitude and Duration of Cumulative Impacts

Description of Potential Impacts by Resource	Magnitude and Duration of Impact	
Resource Name	**No-Action Alternative (B)**	**Proposed Action (A) and Alternative (C)**
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Elevated concentrations of particulate matter	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Elevated concentrations of gaseous emissions	Moderate, short term on active mine areas	Same as No Action on expanded mine areas
Water Resources		
IMPACTS TO SURFACE WATER could result in:		
Temporary reduction in soil infiltration rates and increase runoff	Moderate, short term on active mine area	Same as No Action on expanded mine areas
IMPACTS ON GROUNDWATER could result in:		
Depressed water levels in aquifers adjacent to mine	Moderate, short term near active mine area	Same as No Action on expanded mine areas
Change in groundwater quality in backfilled areas	Moderate, long term near active mine area	Same as No Action on expanded mine areas
Soils		
RECLAIMED SOILS could result in:		
Increased soil productivity	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Reduced erosion	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Land Use/Vegetation		
IMPACTS ON LAND USE could result in:		
Loss of agricultural production	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Reduction of wildlife habitat	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
SURFACE DISTURBANCE would result in:		
Loss of common native vegetation types for wildlife	Negligible, long term on existing mine area	Same as No Action on expanded mine areas
Regional loss of vegetative diversity	Negligible, long term on existing mine area	Same as No Action on expanded mine areas
Wildlife		
IMPACTS ON WILDLIFE FROM SURFACE MINING could result in:		
Loss of habitat for migratory birds	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Reduction in waterfowl habitat	Minor, short term on existing mine areas	Same as No Action on expanded mine areas
Permanent reduction in wildlife habitat diversity	Minor, long term on existing mine areas	Same as No Action on expanded mine areas
Permanent reduction in some wildlife carrying capacity	Minor, long term on existing mine areas	Same as No Action on expanded mine areas

Description of Potential Impacts by Resource Resource Name	Magnitude and Duration of Impact No-Action Alternative (B)	 Proposed Action (A) and Alternative (C)
Cultural IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Loss of 740 sites, 2,491 features, 68,683 acres of cultural landscape. Destruction of cultural features and landscape, archeological sites eligible for National Register are mitigated for purposes of NHPA by data recovery or avoidance.	Major, long term on existing/active mine areas	Same as No action on expanded/active mine areas Under Alternative C, (Preferred), 8 Historic Properties, 282 stone features, 1,240 acres and $425,000 are placed in Indian Cultural Education Trust as offset to impacts.
Socio-economics IMPACTS ON SOCIOECONOMICS could include:		
Mineral and energy related development	Minor, short term on existing mine	Same as No Action on expanded mine areas
Employment	Minor, short term on existing mine	Same as No Action on expanded mine areas
Housing market	Minor, short term due to existing mine	Same as No Action on expanded mine areas
Economic development	Minor, long term due to existing mine	Same as No Action on expanded mine areas
Revenues and royalties	Minor, long term due to existing mine	Same as No Action on expanded mine areas

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes existing conditions of the physical, biological, cultural, and socioeconomic resources in the WMA. Resources addressed here were identified during the scoping process and interdisciplinary team review.

Critical elements of the human environment that could be affected by any of the alternatives include air and water quality, cultural resources, American Indian traditional values, threatened and endangered species, wetlands/riparian zones, invasive non-native species, prime farmlands, and environmental justice. Five critical elements (Areas of Critical Environmental Concern, wilderness, floodplains, wild and scenic rivers, and hazardous wastes) are not present and are not addressed. The WMA has been privately owned by farmers/ranchers for over 100 years and used to raise crops and livestock. It is similar to the surrounding area in west-central North Dakota. No Areas of Critical Environmental Concern have been identified nor is any of the area considered wilderness. No rivers flow through the WMA so no floodplains or wild and scenic rivers exist. No hazardous waste sites are known to exist in the rural setting of the WMA. In addition to critical elements, the chapter includes discussions of potential impacts on soils, alluvial valley floors, land use/vegetation, wildlife, and socioeconomics.

3.2 SETTING

The WMA lies in the glaciated northern Great Plains, south of the Missouri River. It is characterized by gently rolling uplands covered in glacial deposits and marked by shallow depressions that may hold water seasonally. The landscape is characteristic of terrain where Pleistocene ice sheets deposited glacial till and boulders (also called erratics) on eroded Tertiary bedrock. A noteworthy topographic feature is Antelope Creek and its tributaries, which make up a system of erosional valleys collectively known as the Beulah Trench. These channels carried the Missouri River during ice ages. Bedrock outcrops (usually scoria) underlie the steepest slopes in the WMA. Uplands lie approximately 2,000 feet above sea level, with local topographic relief around 300 feet.

The stratigraphic column of the northern Great Plains is sedimentary in origin, approximately three miles thick, and represents geologic periods from the Cambrian through early Tertiary. Deposition occurred in marine, transitional marine, and terrestrial environments. The near-surface stratigraphy includes Sentinel Butte and Coleharbor Formations. The currently-minable coal seams occur in the Sentinel Butte Formation (Paleocene), which was deposited on swampy floodplains along meandering rivers.

The only economically recoverable coal is the Beulah-Zap seam of the Sentinel Butte Formation. The Beulah-Zap coal is 15 to 22 feet thick in the WMA.

3.3 MINE HISTORY AND OPERATIONS

Coteau began mining and selling coal from the Freedom Mine in 1983; current annual production is about 15.6 million tons. Through year 2000, approximately 220 million tons of lignite coal had been hauled from the Freedom Mine. Coal production from the proposed WMA would be used to meet Coteau's contract obligations with Dakota Coal Company, which supplies Dakota Gasification Company's Synfuels Plant, Basin Electric Power Cooperative's Antelope Valley Station and Leland Olds Station, and Great River Energy's Stanton Station. Electricity generated at these power plants is provided to members of the Basin Electric Cooperative and Great River Energy's member cooperatives.

Coal is removed from the Beulah-Zap seam by surface mining techniques. Overburden removal is accomplished with the use of a truck and shovel fleet, draglines, and tractor scrapers. Overburden is spoiled by the dragline using various techniques. Once all overburden has been removed, the coal surface is cleaned, drilled and blasted. Coal is loaded by shovel or front-end loader and hauled by trucks from the pit to coal hoppers. It is then crushed to a prescribed size and transported to the appropriate customer storage area.

After coal is removed, overburden from the next pit is spoiled into the empty pit and the operation becomes a reclamation project. Mining and reclamation of the WMA would be a continuation of normal operations at Coteau's Freedom Mine.

3.4 AIR QUALITY AND CLIMATE

Air Quality Regulations

The basic framework for controlling air pollutants in the United States is mandated by the 1970 Clean Air Act and its amendments, and the 1999 Regional Haze Regulations. The Clean Air Act addresses criteria air pollutants, state and national ambient air quality standards for criteria air pollutants and the Prevention of Significant Deterioration program. The Regional Haze Regulations address visibility impairment.

Air Pollutants addressed in this EIS include (1) criteria pollutants, (2) hazardous air pollutants, and (3) sulfur and nitrogen compounds.

Criteria pollutants are those for which national standards of concentration have been established; concentrations greater than these standards represent a risk to human health. Criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), and particulate matter (PM_{10}), and fine particulate matter (PM_{25}).

Particulate matter (e.g., soil particles, hair, and pollen) is essentially the small particles suspended in the air, which settle to the ground slowly and may be re-suspended if disturbed. Separate allowable concentration levels for particulate matter are based on the relative size of the particle: PM_{10}, particles with diameters less than 10 micrometers are small enough to be inhaled and can cause adverse health effects; $PM_{2.5}$ particles with diameters less than 2.5 micrometers are so small that they can be drawn deeply into the lungs and cause serious health problems. These particles are also the main cause of visibility impairment.

Hazardous air pollutants include N-hexane, ethyl benzene, toluene, xylene, formaldehyde and benzene. Although hazardous air pollutants do not have federal standards, they do have "significance thresholds" set by various states and are typically evaluated for potential chronic inhalation and cancer risks. Hazardous air pollutant emissions are associated with industrial activity, including oil and gas operations, refineries, paint facilities, woodworking shops and dry cleaners.

Sulfur and nitrogen compounds that can be deposited on terrestrial and aquatic ecosystems include nitric acid (HNO_3), nitrate (NO_3^-), ammonium (NH_4^+), and sulfate (SO_4^{--}).

The primary pollutant of concern associated with surface mining operations is particulate matter measuring less than 10 micrometers in diameter (PM_{10}).

North Dakota and National Ambient Air Quality Standards

North Dakota Ambient Air Quality Standards (NDAAQS) and National Ambient Air Quality Standards (NAAQS) set the absolute upper limits for criteria air pollutant concentrations at all locations to which the public has access. The NDAAQS and NAAQS are legally enforceable standards. Concentrations above the NDAAQS and NAAQS represent a risk to human health. State standards must be equally or more strict than federal standards, but cannot be less strict.

The EPA has developed standards for each criteria pollutant for a specific averaging time. Short averaging times (one, three, and 24 hours) address short-term exposure, while annual standards address long-term exposure. Annual standards are set to lower allowable concentrations than are short-term standards to recognize the cumulative effects of long-term exposure.

Table 3.1
National And North Dakota Air Quality Standards For Criteria Pollutants

Air Pollutant	Averaging Time	NAAQS µg/m³	NAAQS ppm	NDAAQS µg/m³	NDAAQS ppm
Carbon Monoxide CO	1 hour	40,000	35	40,000	35
	8 hour	10,000	9	10,000	9
Nitrogen Dioxide NO_2	Annual	100	.053	100	.053
Sulfur Dioxide SO_2	1 hour			715	.273
	3 hour	1,300	.5		
	24 hour	365	.14	260	.099
	Annual	80	.03	60	.023
Ozone O_3	1 hour	235	.12	235	.12
	8 hour	157	.08		
Particulate Matter PM_{10}	24 hour	150		150	
	Annual	50		50	
Fine Particulate Matter $PM_{2.5}$	24 hour	65			
	Annual	15			

Prevention of Significant Deterioration

The goal of the Prevention of Significant Deterioration (PSD) program is to ensure that air quality in areas with clean air does not significantly deteriorate, while maintaining a margin for future industrial growth. Under PSD, each area in the United States is classified by the air quality in that region (Table 3.2):

- PSD Class I Areas: Areas with pristine air quality, such as wilderness areas, national parks and areas that are reclassified to Class I (e.g., Indian reservations), are accorded the strictest protection. Only very small incremental increases in concentration are allowed in order to maintain the clean air quality in these areas.

- PSD Class II Areas: Essentially, all areas that are not designated Class I are designated Class II. Moderate incremental increases in concentration are allowed, although the concentrations are not allowed to exceed the concentrations set by North Dakota and federal standards (NDAAQS and NAAQS).

- PSD Class III Areas: No areas have yet been designated Class III. Concentrations would be allowed to

increase more than the Class I and Class II areas; however, concentrations cannot exceed the NDAAQS and NAAQS.

Mandatory PSD Class I areas in the vicinity of Freedom Mine include Theodore Roosevelt National Park and the Lostwood Wilderness Area in North Dakota. Class I areas in Montana include the Medicine Lakes Wilderness Area, and Fort Peck Indian Reservation. The Freedom Mine region and remaining Indian reservations in Montana and the Dakotas are classified as PSD Class II.

Our analysis in Environmental Consequences compares potential air quality impacts from the Proposed Alternative to applicable ambient air quality standards and PSD increments. Comparisons to the PSD Class I and II increments are intended to evaluate a threshold of concern for potential impacts and do not represent a regulatory PSD Increment Consumption Analysis. Even though most of the development activities would occur within areas designated PSD Class II, potential impacts on regional Class I areas are evaluated.

Table 3.2
PSD Increments

Pollutant	Averaging Time	PSD Increment Class I µg/m³	Class I ppm	Class II µg/m³	Class II ppm
Nitrogen Dioxide NO_2	Annual	2.5	0.0013	25	0.013
Sulfur Dioxide SO_2	3 hour	25	0.0096	512	0.1956
	24 hour	5	0.0019	91	0.0348
	Annual	2	0.0008	20	0.0076
Particulate Matter PM_{10}	24 hour	8		30	
	Annual	4		17	

Regional Haze Regulations

Visibility impairment is an indicator of air pollutant concentration. Visibility can be defined as the distance one can perceive color, contrast and detail. Fine particulate matter ($PM_{2.5}$) is the main cause of visibility impairment. Visual range, one of several ways to express visibility, is the farthest distance a person can distinguish a dark landscape feature from a light background like the sky. Without human-caused visibility impairment, natural visual range would average about 150 miles in the western United States and about 70 miles in the eastern United States.

The EPA developed Regional Haze Regulations in response to the Clean Air Act Amendments of 1990. The regulations are intended to maintain and improve visibility in PSD Class I areas across the United States so that visibility is these areas is returned to natural conditions.

Climate and Meteorology

The climate of the Freedom Mine area is classified as mid-latitude semi-arid steppe (Trewartha and Horn, 1980). Steppe climate is characterized by large seasonal variations in temperature (for example, cold winters and warm summers) and by precipitation levels that are low but still sufficient to support grasses.

Weather data for the Freedom Mine area are available from the state ambient monitoring station located in Beulah, North Dakota. Beulah is at an elevation of 1,785 feet and is about nine miles southeast of the proposed WMA.

Temperature

Annual temperature normal is 43° F in Beulah, North Dakota. Summer highs are usually in the 80s and winter lows are generally in the single digits.

North Dakota temperature data are available for the past 40 years (1961 through 2000). These data show little overall warming or cooling in Beulah, North Dakota (NOAA, 1992 and 2002).

Precipitation

Mean annual precipitation is 17 inches in Beulah. Data from the National Oceanographic and Atmospheric Administration (NOAA) show a very slight drying from the period between 1961 and 1990 to the period between 1971 and 2000. (NOAA, 1992 and 2002).

Dispersion

Atmospheric stability is a measure of the atmosphere's capacity to disperse pollutants. Although stability data are not available for the Freedom Mine, they are available for the Bismarck International Airport, about 70 miles to the southeast. These data indicate that annual dispersion at Bismarck is high (stability classes A, B and C) less than 15 percent of the time, low (stability classes E and F) about 30 percent of the time, and fair (stability class D) about 57 percent of the time (EPA, 1992).

Wind Velocity

Windy conditions are common due to the passage of mid-latitude cyclones and associated fronts compounded by the lack of physical barriers. Prevailing winds are from the north-northwest at an average speed of 12 miles per hour. Winds from the east and southeast are also commonplace.

Air Quality

Elements of air quality addressed in this EIS include concentrations of air pollutants and visibility. Air quality monitoring shows concentrations of air pollutants has remained steady, while coal production has more than doubled during a similar period.

Pollutant Concentrations

Pollutant concentration refers to the mass of pollutant present in a volume of air and can be reported in units of micrograms per cubic meter ($\mu g/m^3$), parts per million (ppm) or parts per billion (ppb). The State of North Dakota has used monitoring and modeling to determine that the Freedom Mine is in compliance with North Dakota and federal concentration standards.

Table 3.3 presents background concentrations for the five criteria pollutants addressed in this analysis. These concentrations are intended to represent air quality conditions in western North Dakota. The table shows background concentration (Monitored Concentration) and as a percentage of applicable federal and North Dakota air quality standards.

Sulfur Dioxide

Sulfur dioxide (SO_2) forms during combustion from trace levels of sulfur in coal or diesel fuel and can convert to ammonium sulfate (NH_3SO_4) and sulfuric acid (H_2SO_4), which can cause visibility impairment and acid rain. Volcanoes are natural sources of SO_2.

The State of North Dakota monitored SO_2 concentrations during 2002 near Dunn Center. The background SO_2 concentrations are about two to four percent of NAAQS.

Other monitoring of sulfur compounds in the Freedom Mine region includes SO_2 concentration monitoring by the Dakota Gasification Company, SO_2 concentration monitoring in Theodore Roosevelt National Park by the State of North Dakota, SO_2 concentration and dry deposition monitoring by the **C**lean **A**ir **S**tatus and **T**rends **Net**work (CASTNet), and precipitation chemistry and wet deposition monitoring by the National Atmospheric Deposition Program (NADP). The State of North Dakota has monitored SO_2 concentration at the Dakota Gasification Company monitoring stations #16 and #17 since 1995. These data show that SO_2 concentrations have been steady and well below the SO_2 NAAQS and NDAAQS from 1995 through 2002.

Table 3.3
Background Concentrations of Criteria Air Pollutants

Pollutant	Averaging Time	Monitored Concentration	Percent NAAQS	Percent NDAAQS
Carbon Monoxide CO	8 hour 1 hour	4.5 ppm 7.2 ppm	50% 21%	50% 21%
Nitrogen Dioxide NO_2	Annual	1.7 ppb	3%	3%
Sulfur Dioxide SO_2	Annual 24 hour 3 hour 1 hour	1.2 ppb 3 ppb 11 ppb 21 ppb	4% 2% 2%	5% 3% 8%
Ozone O_3	8 hour 1 hour	62 ppb 68 ppb	52% 85%	 85%
Particulate Matter PM_{10}	Annual 24 hour	13 $\mu g/m^3$ 28 $\mu g/m^3$	26% 19%	26% 19%
Fine Particulate Matter $PM_{2.5}$	Annual 24 hour	6 $\mu g/m^3$ 14 $\mu g/m^3$	40% 22%	

The State of North Dakota has also monitored SO_2 in Theodore Roosevelt National Park since 1980. These data show that SO_2 concentrations have been steady and well below the SO_2 NAAQS and NDAAQS from 1980 through 2002.

The EPA questioned compliance with the SO_2 PSD increments. The findings of two state public hearings indicated the North Dakota State Implementation Plan (SIP) is adequate to protect against air quality deterioration. Refer to the EPA (EPA, 2003) and the State of North Dakota (North Dakota Department of Health, 2003) for in-depth analysis.

Mercury Emissions

The EPA has identified emissions from coal-fired power plants as a significant source of atmospheric mercury (Hg). Potential impacts from Hg emissions include impacts to public health and to aquatic ecosystems.

Mercury emissions depend on coal chemistry and air pollution controls. Emissions from all reported sources in Mercer County, North Dakota, were 1,040 pounds of mercury compounds in 1999. Mercury emissions from coal-fired power plants in Mercer County, North Dakota, for 1999 were 310 pounds from the Basin Electric Power Cooperative and 113 pounds for the Great River Energy Stanton Station.

Mercury emissions from power plants are a significant source of anthropogenic mercury. Research by the University of North Dakota will evaluate Hg emissions and cost-effective control options to be applied to most coal-fired applications.

The public health impact of greatest concern is neuro-toxicity associated with ingestion of dietary methyl-mercury by pregnant women. Although consumption of fish is the primary cause for human and wildlife exposure to methyl-mercury, EPA does not advise the typical U.S. consumer of fish from restaurants and grocery stores to limit fish consumption.

Because Hg accumulates most efficiently in the aquatic food web, fish-eating birds and mammals are more highly exposed to Hg than any other known components of aquatic ecosystems. Adverse effects of Hg exposure to fish, birds and mammals include death, reduced reproduction, impaired growth and development, and behavioral abnormalities.

From the Freedom Mine, Coteau provides lignite to Basin Electric's Antelope Valley Station and Leland Olds Station. It also provides coal for Dakota Gasification Co.'s Great Plains Synfuels Plant. Until recently Coteau supplied Great River Energy's Stanton Station. The Stanton Station switched to subbituminous coal imported from Montana. Both units of the Antelope Valley Station are equipped with a spray dryer and baghouse for air pollution control. North Dakota Department of Health indicates 376 pounds. of mercury emissions in 1999 (Bachman 2005). Both units of the Leland Olds Station are equipped with an electrostatic precipitator for air pollution control. Mercury emissions in 1999 were 310 pounds. Basin Electric does burn a small amount of subbituminous coal at this facility. Unit 1 at the Stanton Station is equipped with an electrostatic precipitator, while Unit 10 is equipped with a spray dryer and baghouse. Mercury emissions in 1999 were 113 pounds (Bachman 2005). The boilers at the Great Plains Synfuels Plant are fired on a variety of waste products and byproducts (no coal) and are equipped with a scrubber (ammonia as the reagent) and a wet electrostatic precipitator.

There is one other power plant in Mercer County, North Dakota. The Coyote Station, which is just south of Beulah, gets its lignite from the South Beulah Mine which is operated by Dakota Westmoreland. It is equipped with a spray dryer and baghouse. Mercury emissions from Coyote Station were 260 pounds. in 1999 (Bachman 2005).

Total mercury emissions from coal combustion in power plants in North Dakota during 1999 is estimated at 1.024 tons (2048 pounds) (Bachman 2005).

Particulate Matter

The State of North Dakota has monitored PM_{10} concentrations near Beulah, North Dakota. since 1995 and $PM_{2.5}$ concentrations since 2000. These data show that PM_{10} concentrations have been below PM_{10} NAAQS from 1995 through 1998 and that $PM_{2.5}$ concentrations have been below $PM_{2.5}$ NAAQS from 2000 through 2002.

Visibility

The Inter-Agency Monitoring of Protected Visual Environments (IMPROVE) has measured visibility in national parks and wilderness areas in the United States since the 1980s. North Dakota's one IMPROVE station is located in Theodore Roosevelt National Park (installed in 1999). Visibility can be expressed in terms of deciviews (dV), a measure for describing perceived changes in visibility. One dV is defined as a change in visibility that is just perceptible to an average person.

Visibility data are calculated for each day, ranked from cleanest to haziest, and divided into three categories:

- 20 percent cleanest: mean visibility for the 20 percent of days with the best visibility
- average: the annual median visibility
- 20 percent haziest: mean visibility for the 20 percent of days with the poorest visibility

Preliminary analysis of the North Dakota station through May 2000 shows that average visibility is about 70 to 80

miles. This IMPROVE station has not operated long enough to determine a trend of improving or worsening visibility condition in Theodore Roosevelt National Park.

Summary of Existing Air Quality

Air quality monitoring and dispersion modeling show that air quality in the Freedom Mine region is generally good. Table 3.4 indicates air quality components along with comments on present situation.

3.5 WATER RESOURCES

Groundwater

Shallow groundwater occurs in unconfined aquifers—sandstone and lignite strata—of the Sentinel Butte Formation. The Beulah/Lower Beulah lignite, which is the focus of mining, is the thickest of the shallow lignites and forms a continuous bed over most of the WMA. This aquifer is the source for 17 wells in the WMA. The water is used for both domestic and livestock watering purposes. These wells can produce water in the range of one to 12 gallons per minute, with the majority flowing at three to seven gallons per minute. Water quality is highly variable.

Precipitation is the sole source of groundwater for uplands in WMA. North-central Mercer County receives about 17 inches of precipitation annually. Four-fifths (14 inches) of this comes as rainfall and one-fifth (three inches) as snowfall. In western North Dakota, annual evapotranspiration greatly exceeds total annual precipitation. The amount of precipitation infiltrating the ground is small compared to the percentage of precipitation lost to runoff, transpiration and evaporation. The rate of groundwater recharge is trivial because of low annual precipitation and the low hydraulic conductivity of surficial materials. Under natural conditions, the groundwater flow regime occurring within a layered sequence of till, silt, clay, and lignite is very slow and produces small vertical recharge rates. However, given a large enough area and enough time, precipitation can provide substantial amounts of water to local aquifers.

Table 3.4
Summary of Air Quality in the Freedom Mine Region

Air Quality Component	Comment
Climate	
Temperature	Temperatures in Beulah show no warming or cooling trend.
Precipitation	Very slight decrease in mean annual precipitation in Beulah (.05 inches)
Air Pollutant Concentrations	
Criteria Air Pollutants	• Concentrations in Beulah and Theodore Roosevelt National Park (TRNP) are in compliance with NAAQS and NDAAQS. • SO_2 concentrations are low and steady in TRNP. Compliance with the SO_2 PSD increments has been questioned, although monitored data appear to be below SO_2 PSD increments.
Visibility	
Badlands Wilderness	20% cleanest: 100 – 120 miles average: 70 – 80 miles 20% haziest: 30 – 40 miles
Theodore Roosevelt National Park	Average visibility about 70 – 80 miles
Atmospheric Deposition	
Wet Deposition	Precipitation pH > 5.0 in Theodore Roosevelt National Park from 1981 through 2001.
Dry Deposition	Data available only from 06 October 1998 through 04 January 1999
Total Sulfur Deposition	Deposition rates appear to be well below US Forest Service guidelines from 1981 through 2001

Surface Water

The WMA is divided into the watersheds of West Antelope Creek, Knife River, and Lake Sakakawea, all of which lie within the Missouri River drainage basin. The area does not contain perennial streams or natural lakes. Surface runoff drains eastward through Antelope Creek into the Knife River, northward along several tributaries into Lake Sakakawea at Beaver Creek Bay, and southward into Spring Creek and the Knife River. Local ephemeral and intermittent streams have peak flows as a result of snowmelt or summer thunderstorms. Annual runoff averages about one inch. Surface water is typically a sodium-sulfate type.

Forty-three pre-mining stock ponds are located within the WMA and are used for livestock watering. Stock pond configurations consist of dugouts and/or embankments and are fed by surface water runoff or a combination of surface water and springs. The number of stock ponds within the permit area is consistent with native grassland being the primary land use. No alluvial valley floors or floodplains are present.

3.6 SOILS

A wide range of soils exists in the WMA. A registered Professional Soil Classifier of North Dakota conducted a detailed soil survey of the proposed permit area. Soil mapping units are delineated and identified along with the depth of topsoil and subsoil of each unit that is suitable for saving and replacing during reclamation.

Soil series such as Amor, Cabba, Zahl, or complexes of these soils, commonly occupy steeper areas (25 percent+ slopes). The Amor and Cabba series are moderately deep and shallow soils, respectively, derived from underlying soft shale and sandstone bedrock. Zahl series is a shallow soil developed in a thin mantle of glacial till that overlies soft bedrock. These loamy soils possess low natural fertility and are used primarily as grazing lands.

Soil series such as Arnegard, Bowbells, Grail, Parshall, Shambo, Straw, Williams, or complexes of these soils, are found over much of the landscape of the WMA where gentle to moderate slopes exist. These soils have formed in wind or water deposited alluvial sediments and in glacial till. They possess high natural fertility and are used extensively for cropland. Steeper portions of these soils are commonly used for hay and pastureland.

Natural Resource Conservation Service-designated prime farmlands are present on approximately 1,022 acres throughout the proposed WMA. Of this total, approximately 143 acres of prime farmland overly federal coal tracts.

3.7 LAND USE/VEGETATION

The WMA lies in the Missouri Slope Vegetative Zone and ranges from flat ground to gently rolling hills, steeper hills dissected by valleys (trenches), wetlands, and shallow drainages. The primary land uses on federal coal tracts are cropland and native grassland as shown in Table 3.5.

Table 3.5
West Mine Area Land-Use Tabulations (Acres)

Land Use	Federal Coal Tracts	Entire Permit Area
Cropland	1,118.0 (20%)	5,325.6 (31%)
Native Grassland	3,982.2 (72%)	10,660.0 (63%)
Tame Pasture	176.9 (3%)	332.3 (2%)
Shelterbelt	11.6 (<1%)	41.2 (<1%)
Wetlands	67.0 (1%)	227.4 (1%)
Stockponds	3.5 (<1%)	12.6 (<1%)
Woodlands	172.7 (3%)	356.6 (2%)
Industrial	12.3 (<1%)	89.3 (<1%)
	5,544.2 acres	17,051.0 acres

Land uses and vegetation characteristics of federal coal tracts are similar to surrounding lands where cropland is intermixed with native prairie. Land uses and vegetation patterns reflect local and regional economic conditions along with climatic, geologic, and edaphic factors.

Vegetation surveys of native grasslands indicate that the range is in generally good condition. Common species include western wheatgrass, blue grama, green needlegrass, Junegrass, sedges, and forbes. No special-status plant species have been found in the study area. Although not specifically inventoried, invasive, non-native noxious weeds such as Canada thistle and leafy spurge are likely scattered throughout the WMA.

Wetlands cover nearly 230 acres of the WMA. They are found primarily along deep, dissected drainages. A majority of pothole-type wetlands are located off the federal coal tracts in Sections 15 and 21, T. 145 N., R. 88 W. Sixty-seven acres of Class 3 wetlands have been identified on the federal coal tracts of the WMA. These features were identified on color infrared photography acquired and interpreted by the U.S. Fish & Wildlife Service for a National Wetlands Inventory carried out between 1979 and 1984.

Five wetland seeps were located during a detailed soil survey conducted over the WMA. Three of the seeps are found in the southwestern part of the WMA and two in the north. The seeps range from one-tenth acre to about two acres in

size (5.25 total acres). One seep has characteristics of a fen. Fens are peat-forming (organic soil) wetlands that receive nutrients from sources other than precipitation, usually from upslope sources through drainage from surrounding mineral soils and from groundwater movement. Fen soils typically must have a surface organic horizon greater than 16 inches in thickness. They differ from bogs in that fens are less acidic and have higher nutrient levels. The seep in Section 6, T. 144 N., R. 88 W., which is about one-half acre in size, demonstrates the fen characteristics described above. The other four wetland seeps would be considered fen-like but not true fens.

3.8 WILDLIFE

Wildlife surveys of the WMA identified larger mammals including coyote, red fox, mule deer, white-tailed deer, pronghorn antelope, rabbit, raccoon, badger, porcupine, and skunk. Smaller mammals include the fox squirrel, weasel, ground squirrel, pocket gopher, and various species of mice and voles. No prairie dogs (a T&E candidate species) are known to exist in the WMA.

Amphibians and reptiles that might be found in the WMA include blotched tiger salamander, Great Plains toad, northern leopard frog, western painted turtle, rattlesnake, plains garter snake, and bull snake.

Avian surveys indicate this area is not used for nesting by eagles and used only minimally by other raptors. Red-tailed hawks and northern harriers are common migrant raptors found throughout the area. Bald and golden eagles have been seen flying around the Freedom Mine. Sharp-tailed grouse, wild turkey, gray partridge, and pheasants have been noted, but this area is outside the range of greater sage-grouse. The Migratory Bird Treaty Act puts special emphasis on those birds that use an area seasonally. Common migrants to west-central North Dakota recently observed in the WMA include mallard, blue-winged teal, mourning dove, willow flycatcher, eastern and western kingbird, robin, meadowlark, cedar waxwing, common yellowthroat, song sparrow, redwing blackbird, Brewer's blackbird, cowbird, and goldfinch. Some songbirds such as house sparrows, magpies, blue jays, and chickadees may be seen in the area year-round.

Detailed lists of wildlife observed on and in the vicinity of the WMA along with a discussion of wildlife can be found in Coteau's PAP submitted to the PSC.

The BLM consulted with the U.S. Fish and Wildlife Service (FWS) regarding threatened and endangered (T&E) species. The FWS responded by memo (March 29, 2002) that it wase not aware of any T&E species listed for Mercer County frequenting the WMA. The FWS concluded that it did not object to leasing the federal coal tracts, consistent with BLM's 1988 RMP. On July 7, 2003, the BLM requested an update from FWS on T&E consultation because over a year had passed since the initial correspondence. The BLM North Dakota Field Office received a reply from FWS (August 22, 2003) confirming its earlier conclusion. There were no FWS candidate (Dakota skipper butterfly) or sensitive (western burrowing owl, Baird's sparrow) species observed during wildlife surveys conducted within the past three and one-half years in the WMA.

Key wildlife habitats consisting of wooded draws, wooded shrub lands, and riparian habitats greater than approximately 40 acres in extent were placed in a category called Wildlife Threshold Acres in the coal planning section of the North Dakota RMP. The Antelope Coal Study Area (CSA), of which the WMA is a part, had 2,164 threshold acres identified within it. The RMP stated that up to half (1,082) of the threshold acres would be allowed to be leased without restrictions. There are approximately 780 wildlife threshold acres in the WMA. No other wildlife threshold acres have previously been leased in the Antelope CSA. Therefore, all wildlife threshold acres in the WMA would be available for leasing.

3.9 CULTURAL RESOURCES

A survey of the WMA was conducted in 1999 (Boughton et al. 1999). Two hundred fifty-one sites were recorded within the WMA, including 201 prehistoric and 50 historic period sites. Table 3.6 shows the distribution of prehistoric sites above federal coal within the WMA. The prehistoric sites consist of stone rings, cairns and alignment features, a few lithic scatters, a single petroglyph, burial, and effigy sites as explained in Appendix D (Archeological Features) and tabulated in Table 3.7.

Table 3.6
Prehistoric Sites Of The West Mine Area

Prehistoric Sites	Above Federal WMA	Above Federal Coal
National Register eligible	40	13
Not eligible	161	50
TOTAL	201	63

Following the 1999 survey, in 2000 a Testing and Evaluation Plan was developed for National Register of Historic Places (NRHP) evaluation of the prehistoric sites. The sites were tested that same year (Peterson et al. 2000; Boughton et al. 2001). This plan defined data gaps, developed a research design and defined the registration requirements to recommend prehistoric sites eligible for the NRHP under Criterion D. Criterion D is the ability of a site to yield, or

Table 3.7
Prehistoric Archeological Features within the West Mine Area

Prehistoric Features	Federal Coal	State Coal	PVT Coal	Total
Stone rings	444	86	755	1,285
Stone Cairns	167	86	152	405
Stone Alignments	13	1	7	21
Stone Lined Depressions	2	1	6	9
Effigy	1	0	0	1
Recorded Burial/Earthen Burial Mound	1	0	0	1
Others (Cultural Material Scatter/Petroglyph)	4	0	6	10
TOTALS	**632**	**174**	**926**	**1,732**

potentially yield, information important to prehistory or history. After the sites were tested in 2000, NRHP eligibility recommendations were made for prehistoric sites based on the Testing and Evaluation Plan criteria (Boughton et al. 2001). In addition to those recommendations that had been based on the plan criteria, sites with important individual features were also recommended as eligible. A total of 39 prehistoric sites were determined eligible under criterion D (Figure 3.1).

Historic period sites were also recorded during the archeological surveys (Boughton et al. 1999). These historical sites included farmsteads, depressions/foundations, windmills, quarry sites, a bridge, a pump, a mine and a couple of historic period cultural material scatters. After reviewing historical sources, only the Ricker farmstead, 32ME189, was recommended eligible to the NRHP under Criterion C because it reflected traditional German-Russian methods of construction.

In addition to the prehistoric sites having archeological significance and the historic period site with significant architecture, a Traditional Cultural Property (turtle effigy) was also identified. Elders of the Three Affiliated Tribes and the Standing Rock Sioux brought the site to the BLM's attention.

Prehistoric sites within the WMA include: 1,721 stone features (rings, cairns, alignments, effigy, lined depressions), three known burial sites, and the possibility of other unmarked burial sites (Table 3.7). All these features have continuing importance to prehistorians and American Indian communities with historic ties to the area.

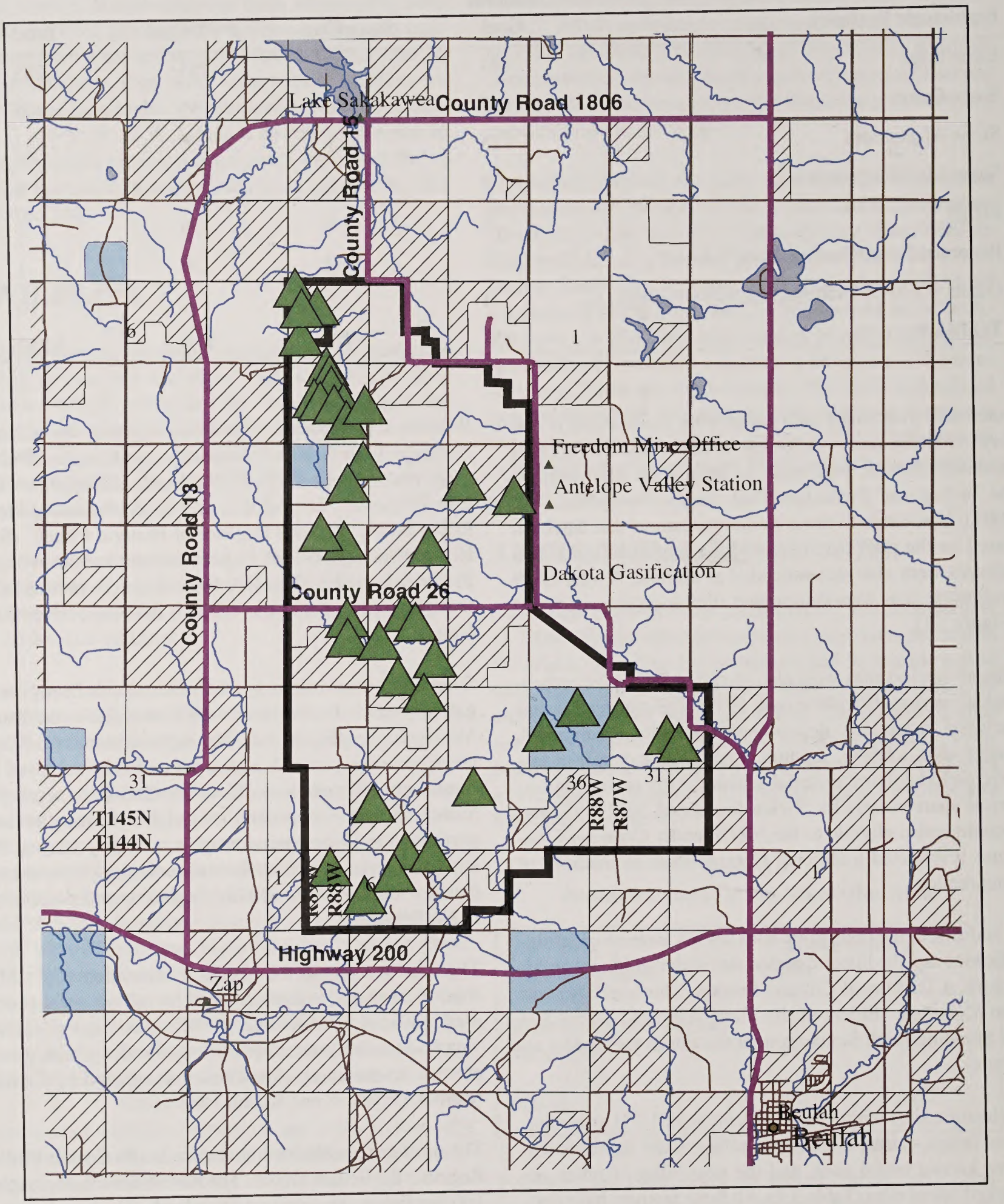
The context for the archeological resources is the in North Dakota State Plan for archeological sites, which was developed as a general historic context for archaeological sites in the state. The plan summarizes existing information, identifies gaps in the data and provides research topics. The primary purpose was to "facilitate the identification of 'Historic Properties,' i.e., cultural sites or properties eligible for listing on the National Register of Historic Places" (State Historic Society of North Dakota-Archaeology and Historic Preservation [SHSND-AHP] 1990:A.1). The portion of the State Plan pertinent to the WMA is the Knife River Study Unit.

Since 1979, approximately 50,540 acres have been investigated for cultural resources in what is identified as the Coteau Mining Region (Figure 3.2). This region includes the WMA, areas previously mined, and areas currently surveyed for future mining operations. Three hundred sixty-seven prehistoric sites have been identified and data recovery has been performed at 19 sites previously impacted by mining. Perhaps more is known about the archaeological features associated with the Coteau Mining Region than anywhere else in North Dakota.

The region is part of the glaciated subsection of the Missouri Plateau and is distinguished by rolling uplands covered in glacial till. A number of Pleistocene-age glacial advances deposited successive till layers along with glacial erratics across an erosional relief dominated by Tertiary bedrock (Wyckoff and Kuehn 1983:160).

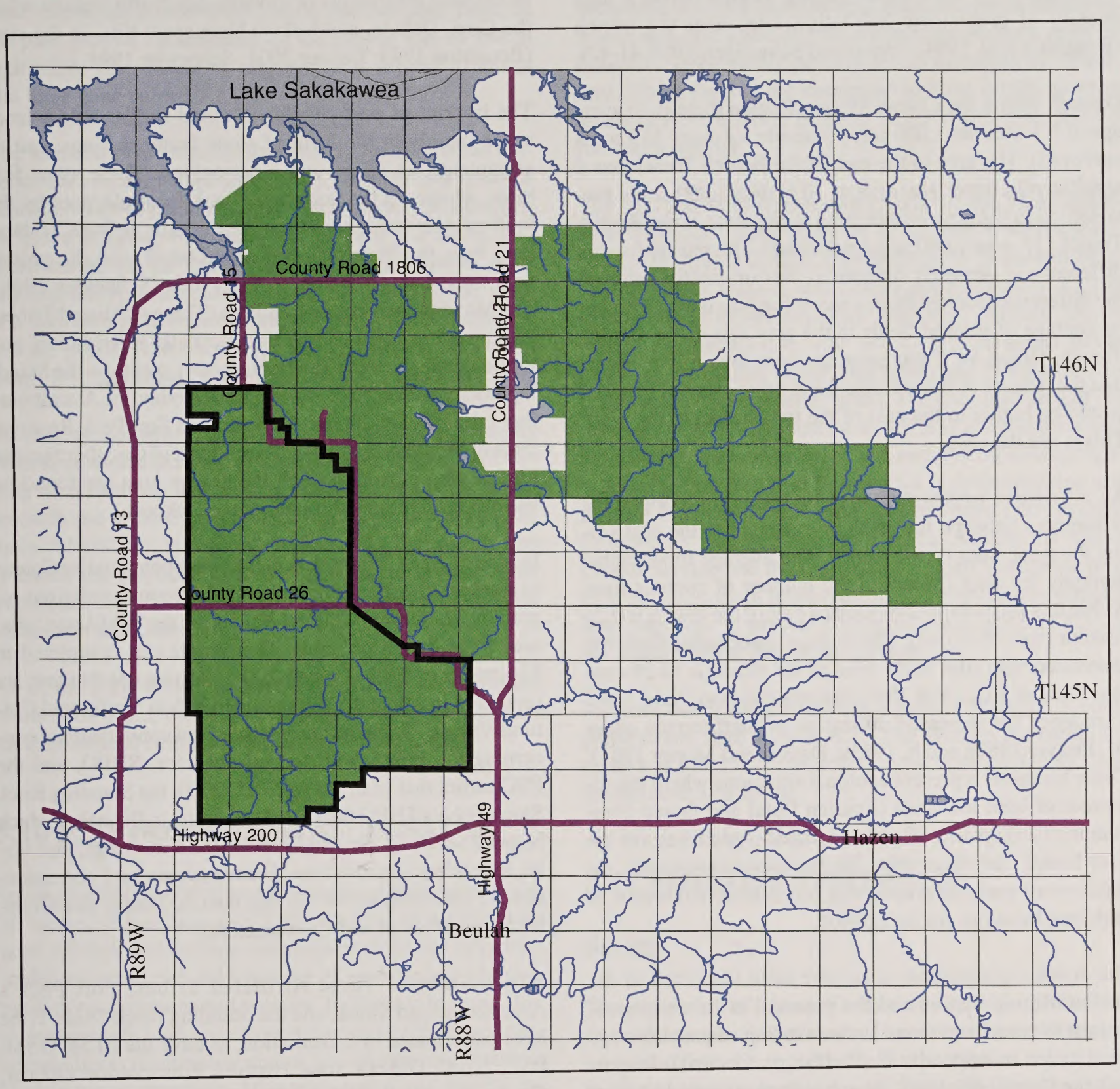
The most noticeable natural feature in the Coteau Mining Region is the Beulah Trench. The Beulah Trench lies roughly 100 feet below the surrounding uplands. The trench runs in a southeast to northwest direction; its northern terminus marked by Beaver Creek. Approximately four miles north of Beulah, the trench splits into the Hazen Branch to the east and the Zap Branch to the west. The Hazen Branch borders a major portion of the WMA's southern boundary. The Beulah Trench and Knife River valley apparently served

Figure 3.1
West Mine Area Showing National Register Eligible Historic Properties



No warranty is made by the BLM for the use of the data for purposes not intended by BLM

Figure 3.2
Coteau Mining Region



Legend
Coteau Mine Region
West Mine Area

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No warranty is made by the BLM for the use of the data for purposes not intended by BLM

as an ice marginal route of the Missouri. As the ice continued to melt, a more easterly course was followed, and the Beulah Trench segment was abandoned (Carlson 1973:49-51). Surveys of the Coteau Mining Region reveal a high density of prehistoric habitation sites near the trench (Boughton et al. 1994; Deaver and Schweigert 1988:41-42).

Overall, within the Coteau Mining Region there is an average of 6.3 sites per 1,000 acres (one site for every 159 acres surveyed). The area to the east of the Beulah Trench has a significantly lower site density (4.6 sites/1,000 acres surveyed) than the area investigated to the west of the Beulah Trench (11 sites/1,000 acres surveyed). The reason for this difference is presently unclear. It was originally believed the difference resulted from a recording bias due to a higher percentage of plowed fields in the area east of the Beulah Trench. However, if this were the case, one might expect that the density of lithic scatters and other cultural material would be higher to the east of the trench than to the west. This is not the case.

An alternative explanation may be related to topographic differences between the areas investigated to the east versus the west sides of the trench. The average topographic diversity for sites (based on the number of contour lines within one mile of the site) located east of the trench is 9.25 contour lines (92.5 feet). The average topographic diversity associated with sites to the west of the trench is 15.24 contour lines, or 152.3 feet. Previous investigations have noted a tendency for increased utilization of bluff/terrace edges (K. Deaver 1980a and b, 1983a; Deaver and Morter 1981). These locations represent ecotonal situations where the resources of both lowlands (riparian floral and faunal communities) and uplands (floral and faunal communities of the river breaks) are accessible. The increased topographic diversity may mark the presence of ecotonal environments as preferred localities for occupation.

The cultural components that have been identified in the Coteau Mining Region and the potential of future investigations to contribute to our understanding of past lifeways are detailed in Appendix C (Prehistoric Context). In general, the Coteau Mining Region has been occupied, at least intermittently, for the past 6,000 years. The best temporal data is derived from 20 radiocarbon dates from features within stone ring sites, but the majority of the chronological information comes from the typological cross-dating of projectile points. This information indicates that the majority of features are associated with the archeologically-defined Besant Complex of the Plains Woodland tradition/Late Prehistoric Period (Deaver and Brownell 1992). This complex may have begun as early as 3,000 years ago and continued until 800 years ago.

At the same time the surveys and testing were being conducted, regional American Indian cultural resource specialists were invited to examine the sites and provide information pertinent to eligibility as Traditional Cultural Properties (Deaver 2001). The Assiniboine, Chippewa, Mandan, Hidatsa, Arikara, Cheyenne, and Yanktonai have claims to be original inhabitants of modern-day North Dakota while the Cree, Dakota, and Lakota have spent time in the state (Boughton 1999; Deaver 2001; Schneider 1994,).

The imprint of past peoples is found on the WMA landscape mainly in the form of stone features: rings, cairns, alignments, an effigy and a petroglyph. These stone features, which dot the landscape, mark locations used by the predecessors and ancestors of the Mandan, Arikara, Hidatsa and, later, the Yanktonai Sioux and other nomadic groups who moved into the area in the 1700s (Schneider 1994). The Mandan, Arikara, and Hidatsa (Three Affiliated Tribes) are current residents of the Fort Berthold Reservation, and the descendents of the Yanktonai largely reside on the Standing Rock and Fort Peck Reservations. Today, the Assiniboine live primarily on the Fort Belknap and Fort Peck Reservations in Montana, while the descendants of the other Siouian groups who moved through the project area are found on various reservations throughout the Dakotas.

In June of 2000, Ethnoscience, Inc. was contracted by Coteau to conduct investigations and provide recommendations regarding Traditional Cultural Values for the WMA and adjacent mine extension areas. That report was completed in September of 2001 (Deaver 2001). Portions of that text are presented in Appendix E (American Indian Traditional Cultural Values). Tribal representatives had conversations concerning the WMA with federal agencies, SHPO, and the PSC earlier that year. On April 11, 2000, the Standing Rock Sioux Tribe's THPO facilitated a meeting in Bismarck which began a series of meetings/consultation meetings, site visits, individual consultations, conversations, and correspondence concerning the WMA that continue today (see Chapter 5 Consultation and Coordination).

Fort Berthold's Three Affiliated Tribes, Fort Peck's Assiniboine and Sioux, and the Standing Rock Sioux Tribe have participated in consultation, as have the BLM, OSM, PSC, North Dakota State Historic Preservation Officer, Coteau, the National Trust for Historic Preservation, and the Advisory Council On Historic Preservation. Other American Indian tribes consulted include: Fort Belknap, Oglala Sioux Tribe, Rosebud Sioux Tribe, Santee Sioux Tribe of Nebraska, Yankton Sioux Tribe, Flandreau Santee Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Northern Cheyenne Tribe, Crow Creek Sioux Tribes, and Lower Brule.

Most interviewed tribal specialists embrace a world view that emphasizes the interrelationships between the past and present, the living and dead, people and the environment, and the spiritual and physical aspects of life. Time, from this perspective, is not only a chronological ordering of events but also has a quality and texture, which continues

into the present and future. Time, or more accurately tradition, establishes the rationale and basis for living in the proper fashion. From this perspective, there is often an intimate relationship between a person and his past. Time, or the past, provides a template for the proper way of life. It legitimizes the present by showing it is related to things that have gone before.

The location of a cultural place/site is interpreted as evidence that ancestors recognized the physical and spiritual characteristics of the landscape, which made it an appropriate place to camp, fish, hunt, gather, fast, and so on. Because Indian people today can still recognize these same physical and spiritual characteristics of the landscape, there is a continuing tie between the people and the landscape and the people who created the site and those who view it today. It is this sense of relationship that is important.

Because perpetuation of the cultural relationship is highly valued, cultural places/sites must be shown respect, and visiting them, praying and making offerings may periodically renew the tie to these places on the landscape. In other words, these cultural places become the focus of pilgrimages. The spiritual and physical attributes of a place, as well as its traditional cultural use, are important qualities of cultural places that transcend time.

All of the tribal consultants have repeatedly stated that all of the sites within the project area are culturally important, have traditional cultural associations, or are sacred.

3.10 ENVIRONMENTAL JUSTICE

Environmental justice (Executive Order 12898) refers to the fair treatment and meaningful involvement of people of all races, cultures and incomes with respect to the development, implementation and enforcement of environmental laws, regulations, programs and policies. Its focus is to avoid disproportionately high and adverse human health or environmental effects on minority and/or low-income populations. Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut and other non-white persons are defined as minority populations by the Interagency Working Group convened under the auspices of the Executive Order. Low-income populations are defined as persons living below the poverty level based on total income of $16,700 for a family household of four based on the 2000 census.

None of the defined minority populations represented more than three percent of the population in Mercer County based on 2000 census figures. However, four Indian reservations have their administrative centers in North Dakota, one located in North Dakota but predominantly in South Dakota, and one with an interest in the study area located in eastern Montana. The 2000 American Indian populations of these reservations were: Fort Berthold, 3,986; Spirit Lake (also known as Fort Totten), 3,317; Standing Rock, 5,964; Turtle Mountain, 8,009; Lake Traverse (also known as Sisseton), 3,453; and Fort Peck, 6,391. All but one of these reservations had 1999 family poverty levels in excess of 30 percent. These figures are compared to state family poverty levels of 8.3 for North Dakota, 10.5 for Montana, and 9.3 for South Dakota.

The Fort Berthold Reservation, home to the Three Affiliated Tribes, is located adjacent to the WMA, with a small portion in Mercer County. Fort Berthold is located in west-central North Dakota and covers approximately 12,284 square miles in six counties: McLean, Mercer, Dunn, Mountrail, McKenzie, and Ward. The Missouri River traverses the middle of the reservation and divides the reservation into three separate areas. The total land area of the reservation is 988,000 acres with 457,837 acres in tribal and individual Indian ownership. The major economic occupation on the Fort Berthold Reservation is cattle ranching and farming. Currently, the Three Affiliated Tribes, Fort Berthold Community College, Bureau of Indian Affairs, the Indian Health Service and the Four Bears Casino and Lodge provide the majority of employment. The 1999 family poverty level rate was 31 percent compared for a figure of 8.3 for the state of North Dakota as a whole.

Mercer County had a 1999 family poverty level of 5.5, compared to the state level of 8.3. The average per capita income was $18,256 for Mercer County, compared to $17,769 for the state as a whole.

3.11 SOCIOECONOMICS

Social

The population of Mercer County was 8,664 in 2000. This represented a decline of nearly 12 percent since 1990 due to migration from the area. The county population is projected to continue to slowly decline until 2020. The Freedom Mine began operating in 1983. The communities closest to the mine are Beulah and Hazen. Beulah had a 2000 population of 3,152 and Hazen had a 2000 population of 2,457. The scoping comments from Mercer County, Beulah and Hazen were positive toward the mine's effects on the area.

The 2000 American Indian population of the Fort Berthold Reservation, which is located adjacent to the WMA, was 3,986. Consultation has been ongoing with representatives of the Three Affiliated Tribes, whose home is the Fort Berthold Reservation. Indian cultural representatives and elders have expressed concerns about the cumulative effects of mining operations on their communities (Deaver, 2001).

Economics

The lignite industry, including the four operating mines, the electricity generating facilities and the gasification/synfuels plant, are located in the "Lignite Triangle" running from Underwood to Beulah to Center, in McLean, Mercer, and Oliver Counties. Lignite production has averaged about 30 million tons in the past 10 years. The Freedom Mine produces 15 million tons on average, half of the total.

Coal mining and coal conversion are basic industries, those which bring money into the state, support and create jobs in other sectors of the local and regional economy (Coon and Lestritz, 2003). The energy sector, which includes petroleum and natural gas extraction, exploration, and refining, accounts for 45 percent of sales in 2000 for State Planning Region 7 (Coon and Lestritz, 2001). Planning Region 7 includes the coal mining counties of Mercer, Oliver, and McClean and the Bismarck Trade Center.

The wages paid in the coal mining industry are among the highest in the state. The annual salaries reported to the Job Service of North Dakota were $62,925 in 2000 compared to a statewide average of $24,683. The comparable figures for Mercer County were $61,514 and $36,122 in 2000 (Coon and Lestritz, 2002).

The coal mining industry contributes substantially to local and state tax revenues including personal and corporate income taxes, sales and use taxes, energy conversion taxes, and coal severance taxes (Table 3.8). Coal severance taxes are a particularly important source of revenue at the county level. The tax is currently 37.5 cents per ton of which 70 percent is distributed to the coal-producing counties. Since 2001, the tax revenue is further apportioned as follows: 40 percent to the county general fund; 30 percent to the cities within the county; and 30 percent to the school districts (North Dakota Office of the State Tax Commissioner, 2002). Over this period, the Freedom Mine has accounted for 91.9 percent of the average annual production.

Table 3.8
Mercer County Coal Production and Severance Taxes

Calendar Year	County Share[1] Million Tons	County Share[1] Severance Tax (Million Dollars)
1997	17.05	4.48
1998	17.6	4.62
1999	17.3	4.54
2000	16.5	4.33
2001	16.8	4.41
2002	17.35	4.55
2003	17.41	4.57

[1] From 1997 to 2001, the severance tax was 75 cents per ton and the counties were allocated 35 percent. After 2001, the tax was reduced to 37.5 cents per ton but the counties' share was increased to 70 percent.

The importance of coal mining, employment, and severance taxes to the local communities is represented by the following statements: Within the Beulah School District, coal severance taxes provided 12 percent ($689,000) of the total budget for the 2002-2003 school year; 15 percent of the total enrollment of has a parent working at the Freedom Mine (Volesky 2004). In the adjacent Hazen School District, coal severance taxes provided 12 percent ($574,000) of the total budget for the 2002-2003 school year; 12 percent of the Hazen student body (88 students) have a parent working at the Freedom Mine (Ness 2004). Coal severance taxes also provided 45 percent ($520,000) of the 2003 general fund operating budget for the City of Hazen (Adler 2004).

Federal production has historically been a smaller share of Mercer County production than statewide production. The federal share of coal production is shown in Table 3.9 (Mineral Management Service 2004).

Federal coal production also contributes to state revenues through the 50 percent share of federal coal royalties disbursed to the state annually (Table 3.10). The federal royalties paid averaged slightly more than one million dollars per year. The state share is distributed according to criteria set by state legislation. The mine data in Table 3.10 is combined to avoid disclosure of individual lease data (Minerals Management Service, 2004).

In summary, the direct and indirect employment and the income and taxes generated by coal mining are important to the local and state governments and the local and regional economy. While coal mining is important to North Dakota's economy, federal coal production accounted for less than nine percent of the total state production, and only 4.5 percent of the Mercer County production for the years 1997-2001.

Table 3.9
Federal Coal Production Share (In Million Of Tons)

	North Dakota			Mercer County		
Yr.*	**Total**	**Federal**	**%**	**Total**	**Federal**	**%**
97	29.77	3.313	11.1	16.77	1.234	7.4
98	29.55	2.476	8.4	17.57	.854	4.9
99	30.93	2.223	7.2	17.78	.383	2.2
00	31.16	2.904	9.3	16.46	.609	3.7
01	30.50	2.511	8.2	16.32	.724	4.4
02	30.9	2.147	7.0	17.63	Not Available	

*Federal Fiscal Year

Table 3.10
Federal Coal Production and Royalties

	Sales Volume (Million Tons)	**Royalties (Million Dollars)**
1997	3.313	1.183
1998	2.476	1.164
1999	2.223	1.041
2000	2.904	1.170
2001	2.511	1.541

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

The surface estate of the WMA is almost entirely privately-owned. Coteau holds coal leases for the non-federal coal and is expected to recover all non-federal coal reserves. Adding federal reserves to the WMA mix would not constitute a substantial alteration to the overall mine plan because unleased federal coal accounts for a modest fraction of total reserves.

4.2 ANALYSIS ASSUMPTIONS

The surface mining operation is a major undertaking. Equipment used includes a dragline, overburden trucks and shovels, bulldozers and bottom-dump coal haulers, front-end coal loaders and a variety of trucks (water, dump, supply, fuel, welding, field maintenance). One can also see coal drills, cable movers, sheepsfoot compactors, road graders, mobile cranes, portable air compressors, water pumps, and scrapers on the mine site at any given time.

Coteau employs about 400 persons working eight-hour, 10-hour, or 12-hour shifts from five to seven days per week, depending on conditions and the season of year. It is estimated that as much as a quarter section (160 acres) of coal lands could be disturbed by direct impacts (overburden removal and coal extraction) during an average year in the WMA. Because reclamation is concurrent with mining, an additional 200 acres is unavailable for crops or grazing at any given time.

4.3 AIR QUALITY

Coal mining and processing at the Freedom Mine are sources of particulate and gaseous air pollutants. Fugitive dust is generated by mining, hauling, processing, and storing coal and is mitigated by dust suppression practices. Gaseous pollutant emissions are generated by engine exhaust from mining equipment.

Regulation of industrial air quality falls under the auspices of the North Dakota Department of Health, Environmental Health Section. Compliance with the terms and conditions of an air quality permit ensures fulfillment of applicable state and National Ambient Air Quality Standards (NAAQS).

Alternative A (Proposed Action)

Coteau operates the Freedom Mine under authority granted by North Dakota Air Pollution Control Minor Source Permit to Operate # 085004. The WMA was included in the original permit application and is covered by Coteau's existing permit.

Through the air-quality permit, North Dakota Department of Health sets standards that ensure the project meets requirements of state and federal air-quality regulations. Under Alternative A, development of the WMA would maintain coal production as allowed under Coteau's air quality permit. Maximum annual coal production is limited to 16.5 million tons.

Alternative B (No Action)

Impacts to air resources would be similar to those described above. Freedom Mine would be expanded to include state and private coal; federal reserves would be bypassed during mining. A maximum of 16.5 million tons of coal would be processed at the mine each year.

Alternative C (Preferred)

Impacts under this alternative would be identical to Alternative A. Federal, state, and private coal reserves would be mined and processed. Control of particulate emissions, as required by Coteau's air-quality permit, represents standard industry practice for minimizing particulate emissions.

In summary, mining operations would comply with state ambient air-quality and Class II annual standards under any of the alternatives. No residual or cumulative impacts to air quality or climate (from particulate or gaseous emissions) would occur from a continuation of the present level of operations at the Freedom Mine.

Sulfur Dioxide Exceedences

The U.S. Environmental Protection Agency (EPA) submitted comments on sulfur dioxide emissions from coal-fired power plants using lignite coal from the Freedom Mine as follows:

> [S]ulfur dioxide air emissions in the area of this mine have exceeded the level of significant deterioration (PSD increment) in several areas valued for high-quality, clean air such as National Parks. For this project, areas affected by sulfur dioxide emissions include the Theodore Roosevelt National Park, the Lostwood Wilderness Area, the Medicine Lakes Wilderness Area in Montana and the Fort Peck Indian Reservation.

Sulfur dioxide results from burning coal, an activity indirectly associated with leasing and mining of federal coal. The BLM does not permit nor monitor burning of coal for purposes of generating electricity. Freedom Mine's end use facilities are all operational and licensed by the proper authority.

The North Dakota Department of Health, which is responsible for air-quality monitoring in North Dakota, is negotiating with the EPA concerning sulfur dioxide exceedences in Class I areas. Resolving differences in the measurement and enforcement of air quality standards between state and federal regulators is beyond the scope of this EIS.

4.4 WATER RESOURCES

Groundwater

Surface coal mining impacts groundwater quantity in two ways: (1) aquifers are removed and replaced with unconsolidated backfill and (2) groundwater levels in aquifers adjacent to the mines are lowered as a result of seepage and dewatering into the open pit. If federal tracts are leased, the area of coal removal and reclamation at Freedom Mine would increase slightly, and impacts to groundwater would increase. The area subject to lower water levels would grow roughly in proportion to the area being mined.

Mining of each federal tract would replace shallow aquifers with backfill composed of an unlayered mixture of the clay, silt, and sand that makes up the Sentinel Butte Formation. Impacts to the local groundwater system would include dewatering the coal and overburden within the area of coal removal and enlarging the area of drawdown caused by coal and overburden removal. The extent that a drawdown propagates away from a mine pit is a function of the water-bearing properties of the aquifer. The low permeability of lignite aquifers suggests that measurable declines in groundwater levels would not extend more than one to two miles from an active mine site (Crawley and Emerson 1981).

Disturbances from mining may result in altered chemical quality of shallow groundwater aquifers. Increases in sodium, sulfates, and total dissolved solid concentrations have been reported by Groenwald (1980) and Groenwald and Rehm (1979) at other mines in North Dakota with similar overburden. Degradation of water quality at the mine site is likely. Water quality in replaced overburden would be similarly degraded.

Surface mining would not adversely impact water levels and water quality in deep aquifers. Replacement water from deeper aquifers would be available if shallow wells were adversely affected.

Up to one dozen private water wells could be impacted (either directly by removal of the well or indirectly by water-level drawdown) by mining operations occurring within the WMA. In compliance with state law, mine operators are required to provide the owner of a water right (one whose water source is interrupted, discontinued or diminished by mining) with water of equivalent quantity and quality; this mitigation measure would be included under any mining approval. The most probable source of replacement water would be from an aquifer beneath the Beulah-Zap coal seam. Subcoal aquifers are not removed or disturbed by coal mining and so are not impacted by surface mining activity.

Surface Water

Alteration of existing drainage patterns would occur during mining and reclamation. Because of erosion and sediment control measures (including sediment-control ponds) used during and after reclamation, increases in sediment load to Spring Creek, Antelope Creek, and Lake Sakakawea are expected to be minimal. Erosion could occur during periods of measurable rainfall and snowmelt runoff. Once vegetation growth and density on reclaimed areas becomes sufficiently reestablished, many of the erosion and sediment controls would no longer be necessary. Sediment control is subject to limitations of a National Pollution Discharge Elimination System Permit.

Alternative A (Proposed Action)

Direct and indirect impacts to water resources would occur as a result of coal mining and related activities. Excavation of an open pit would temporarily disrupt local surface water drainage systems. Impacts to groundwater would also occur because mining would remove portions of several sedimentary layers in the WMA.

Alternative B (No Action)

Because mining of non-federal coal would disturb much of the WMA, the impacts under this alternative are similar to those of Alternative A.

Alternative C (Preferred)

Impacts to water resources under Alternative C would be as described for the Alternative A.

The post mining backfill may take in excess of 100 years to reach equilibrium water levels and water quality. Less time would be required near the mining boundaries. Water level and water quality in the backfill would possibly be suitable to provide water to wells for livestock use, but would differ from pre-mining conditions.

Replaced wetlands may not duplicate the exact function and landscape features of all pre-mining wetlands. They are likely to have more open water than pre-mining drainage wetlands and more opportunities for vegetation zone development. This would be expected to provide more habitat for waterfowl. All wetland replacement plans would require approval by the PSC.

4.5 SOILS

Alternative A (Proposed Action)

A short-term loss of soil productivity would occur during mining; productivity would be restored with proper reclamation and management. Topsoil and subsoil removed during early stages of mining would provide an adequate layer of productive material to be replaced and averaged on reshaped overburden during reclamation. The PSC's "Rules Governing Reclamation of Surface-Mined Land" (2001) require all soils within mine permit areas to be intensively surveyed, with depths of topsoil and subsoil layers to be saved, identified and marked prior to lifting. Soil material would either be stockpiled for later redistribution or hauled directly to reshaped overburden that is ready for soil replacement.

Soil instability and erosional problems associated with reclamation would be kept to a minimum with proper handling techniques and adherence to regulatory guidelines as promulgated in the above-reference PSC rules. All runoff from disturbed areas would be required to pass through sedimentation ponds on the mine permit areas, thus trapping water-eroded soil materials before they move offsite. Vegetative cover would be restored on re-spread soils as quickly as possible to stabilize sites and reduce erosion. Reclaimed lands would remain under bond with the PSC until such time that successful reclamation is demonstrated under its standards.

Disturbance of any identified prime farmland would require operations in accordance with performance standards stipulated in the PSC rules.

Alternative B (No Action)

Impacts to soils would be the same as those described for Alternative A, but the 5,571 acres of federal coal would not be leased under this alternative. Even though the federal coal would not be leased, much of the private surface above it could be disturbed by pit-wall layback, haul roads, soil stockpiles, sedimentation ponds and the like. About 5,000 of the 5,571 acres over federal coal could potentially receive surface disturbing activities under this alternative.

Alternative C (Preferred)

Impacts to soils would be as described under Alternative A. The soils as they once existed would disappear with removal prior to mining. The new soil returned during reclamation would be a mixture of the soil originally removed and would develop its own characteristics. Productivity of this new soil would return with good management during reclamation

4.6 LAND USE/VEGETATION

Alternative A (Proposed Action)

Mining would modify topography of the area. Changes in the surface configuration are expected after reclamation as the landscape is restored to its approximate original contour. Steeper slopes may be reclaimed at lower gradients to improve water infiltration and lessen the impacts of erosion.

More land may eventually be converted to cropland after reclamation depending upon surface-owner preferences. Vegetation would be removed in areas being mined, but would be reestablished during reclamation. Some invasive, non-native noxious weeds would be expected to take root during reclamation. The lessee would be required to control such weeds as part of a reclamation program, which would be overseen by the PSC.

Alternative B (No Action)

Impacts would be the same as under the Proposed Action except slightly less surface land and vegetation would be disturbed (see discussion for Alternative B under Part 4.5 Soils).

Alternative C (Preferred)

Impacts would be the same as under the Alternative A. Residual impacts to land use are expected to be minimal because crop, rangelands, wetlands and other wildlife habitats would be replaced. Reclaimed prairie communities may never completely match the surrounding native plant community.

Wetlands, including fen-like wetlands, would be removed during mining. Appropriate water permits (i.e., Corps of Engineers Water Permit) would be required as part of the mine permit process. All wetland replacement plans submitted by the mining company would require approval by the PSC.

4.7 WILDLIFE

Alternative A (Proposed Action)

Wildlife habitat in the WMA has already been greatly reduced by modification of the land from native prairie to cropland. Remaining areas of native prairie are used to graze livestock or are harvested for hay. These habitats would be disturbed incrementally as mining progresses across the landscape. Wildlife, including migratory birds, would be disturbed or displaced where active mining occurs but, in turn, would find new habitat in reclaimed lands or adjacent/nearby undisturbed areas. Restrictions to wildlife movement created by fences, spoil piles, and pits would also occur. Some wildlife mortality would be expected due to mining. Animals such as rodents, skunks, snakes, and frogs would likely be the most vulnerable to injury or death by surface operations. However, this would be offset by additional habitat created by sedimentation ponds and dense grass cover plantings developed during mining and reclamation operations.

Wetland, native prairie, wood/shrub habitat would be removed by mining. These habitats would be replaced as part of the reclamation process.

Alternative B (No Action)

Impacts to wildlife would be very much the same as under Alternative A. Federal coal would not be mined under this alternative, but the recovery of state and private coal and disturbances to private surface over federal coal would result in similar impacts to wildlife.

Alternative C (Preferred)

Impacts to wildlife under this alternative would be as described under Alternative A. Residual impacts to wildlife would be minimal. Habitat restored as part of a well-developed reclamation plan could be as good as what existed prior to mining because of the alternations to the landscape that occurred due to farming and ranching over the past century.

No residual impacts to T&E or candidate plant or animal species are expected. The BLM's North Dakota Field Office consulted with the FWS regarding T&E species. FWS responded by memo, dated March 29, 2002, that it was not aware of any T&E species listed for Mercer County frequenting the WMA. The FWS concluded that it does not object to leasing the federal coal tracts, consistent with BLM's 1988 RMP. On July 30, 2003, the BLM requested an update from FWS on T&E consultation because over a year had passed since the initial correspondence. The BLM North Dakota Field Office received a reply from FWS on August 22, 2003, confirming its earlier conclusion. There were no FWS candidate (Dakota skipper butterfly) or sensitive (western burrowing owl, Baird's sparrow) species observed during wildlife surveys conducted within the past three and one-half years in the WMA.

4.8 CULTURAL RESOURCES

To members of Indian communities with historical ties to the project area, stones and stone features are often as important today as they were in the past. As these stone features are destroyed and remaining features isolated on private tracts, it becomes more difficult for Indian people to gain access to stone-feature sites for traditional purposes. Traditional cultural uses include conducting cultural ceremonies and the collection of culturally important plants located adjacent to the sites. Some of these plants are important as food items and symbols of tribal identity; others may have ceremonial and medicinal uses.

While there may be a tendency to suggest that large and small rings should be considered "more important" because their functions may have been other than tipi rings (see Stone Rings in Archeological Features, Appendix D), consulted American Indians have not rated various stone features differently. Therefore, in this analysis, all stone features are ascribed an equal value. The numbers that are adversely affected, avoided, or preserved, and the acres of cultural landscape surrounding them are enumerated (Tables 4.2 and 4.3). Access to preserved sites is also addressed.

A Programmatic Agreement and Management Plan for cultural resources was developed in compliance with the National Historic Preservation Act and North Dakota Century Code, in concert with the requirements of SMCRA as set forth in the North Dakota coal program. The accepted Management Plan was used for analysis of the alternatives and is the basis for Alternative C. This Alternative varies slightly from that in the DEIS as the Management Plan was modified after the issuance of the DEIS because certain lands to be preserved could not be acquired by Coteau.

Under Alternative A, Historic Properties would be avoided or mitigated by traditional archeological investigation; there would be no active preservation of the sites. Under Alternative B, BLM would withdraw from further cultural resource considerations. Historic Properties, however, would be avoided or mitigated by archeological investigations as in the Proposed Action under the North Dakota Century Code in concert with the requirements of SMCRA. Under Alternative B (No Action) it would be up to Coteau, the PSC, and the Director of the State Historical Society to determine if there would be any active preservation of the sites. Alternative C would provide for an active component of preservation of cultural resources for sites within the WMA, donation of monies to the Indian Cultural Education Trust,

and access to the preserved sites for all Indian peoples as directed by the Programmatic Agreement and Management Plan.

A distinction between avoidance and preservation is critical to this analysis. Under the Programmatic Agreement and Management Plan, designated lands within and adjacent to the WMA would be donated to North Dakota's Indian Cultural Education Trust, preserved for future generations and would provide access to stone features for tribal peoples. If sites are only avoided, while potentially protected from coal mining, they would remain in private ownership and could be destroyed by subsequent development.

The Indian Cultural Education Trust (North Dakota Century Code Chapter 15-68) was conceived by Coteau and enacted by the North Dakota Legislature in 2003. The purpose of the Trust, managed by the North Dakota State Land Department, is to generate income through grazing leases for educational activities of American Indians. Lands would be conveyed into the Trust under the terms and conditions of donor agreements. Donor agreements make provisions for specific site protection measures to be implemented by the tribes and required by state law. Any restrictions on public access or land use activities, the manner in which net income from the Trust would be disbursed to the tribe(s), which tribal representatives are to be contacted with regard to Trust matters, along with any other provisions deemed necessary by the parties to the donor agreement or the State Land Department, are contained in the agreement.

Long-term site protection is afforded for specific sites through Coteau's acquisition of lands and donation to the Trust for perpetual preservation. Funds accumulated in the Trust could allow American Indians to carry on an understanding of traditional cultures to their own people—knowledge that might otherwise be lost across the generations. In this way the future would serve as a link to the past. American Indian access would be provided to preserved sites, allowing them visitation rights to conduct ceremonies and other activities as they see fit. Also, through coordination with tribal representatives, a seed mixture containing traditional plant life would be sown on disturbed lands placed in the Trust. The plants would be available for collection and ceremonial use by American Indians, thereby enhancing the traditional connection to life on the Plains.

Under the Alternatives A and B, sites that are avoided would remain in private ownership. It would be at the landowner's discretion whether sites would be preserved and the lands remain in native pasture. Under Alternative C, these sites, along with additional sites outside the WMA, would be placed in a trust for the protection of cultural resources and the landscape, and to provide access to tribal peoples.

Alternative A (Proposed Action)

The Proposed Action is to lease 5,571 acres of federal coal beneath private surface. Leasing presupposes that the coal would be mined, resulting in direct effects to cultural resources. Under this action, physical disturbance of the only recorded, unmarked burial would be stipulated for no surface disturbance (two additional burials discovered after the issuance of the DEIS would be moved under this alternative). To meet obligations under the NHPA, 14 Historic Properties located over federal coal would be avoided or mitigated for their potential to yield scientific contributions to prehistory through planned archeological investigations in conjunction with 26 other prehistoric Historic Properties located over non-federal coal within the WMA (Table 4.1). In addition, the only historical period Historical Property, 32ME189, would be mitigated through HABS/HAER documentation.

Approximately 5,323 acres and nine Historic Properties overlying federal coal would be directly impacted (Table 4.2). Seven hundred eighty acres in the northwest corner of the WMA and a recorded burial location would be avoided. The 240 acres above federal coal in this area would be stipulated as having no surface disturbance. Within this 780 acres, 12 Historic Properties and 17 other sites would be avoided. Elsewhere in the WMA, 170 other prehistoric sites and 52 historical period sites would be destroyed. Seven hundred eighty acres within the WMA that would be avoided by mining activities and those small areas not necessary for the mine operation would remain undisturbed during the life of the mine. After mining has been completed, land ownership would revert to private (non-corporate) ownership, and access would be by landowner permission. None of the sites would be actively protected from adverse effects.

Alternative B (No Action)

Under Alternative B, the application to lease federal coal would be rejected and federal coal reserves bypassed. Private surface over federal coal would still be affected as non-federal coal is mined (see 2.4). Historic Properties located on private and state coal leases would be mitigated under North Dakota Century Code in concert with the requirements of SMCRA as set forth in North Dakota's coal program. Coteau and the State of North Dakota would determine the management of cultural sites and landscape, Traditional Cultural Properties, and the recorded unmarked burials. BLM would not be involved. For analysis purposes, it is assumed that Historic Properties would be avoided or mitigated by archeological investigations as under Alternative A.

Direct and indirect impacts within the highwall buffer zone (see 2.4) could destroy 102 stone rings, 85 cairns, one stone

Table 4.1
Historic Properties Within the WMA

National Register Site	Minerals	Avoid/ Preserve or Mitigate	Stone Ring	Stone Cairn	Stone Alignments	Stone Lined Depressions	Lithic Scatter and Others
32ME108	FEDERAL	M	5				
32ME1474	PVT	M					1
32ME1475	PVT	M	1	1			
32ME1476	PVT	M	15	7			
32ME1478	PVT	M	4	3			
32ME1482	PVT	M	1				
32ME1483	PVT	M	7				
32ME1488	PVT	M	6				
32ME1491	PVT	M	22	7			
32ME1493	PVT	M	54	3			
32ME1513	FEDERAL	P	100	12	1		
32ME153	FEDERAL	M	83	7			
32ME1539	FEDERAL	A	1	2			
32ME1554	FEDERAL	M	27	1	1		
32ME156	PVT/FEDERAL	M	36	2			
32ME1562	PVT	A	27	4			
32ME1571	PVT	M	7	3			
32ME1577	PVT/FEDERAL	A	28	2			
32ME1578	PVT	P	1	1			
32ME1579	PVT	P	2	1			
32ME1580	PVT	A	1				
32ME1589	FEDERAL	M	1	9	6		
32ME167	PVT	M	11	1			
32ME169	PVT	M	16	1			
32ME171	PVT	M	3	1			
32ME182	FEDERAL	A	14	1			
32ME184	FEDERAL	A	8	2			
32ME185	PVT	P					1
32ME186	PVT	P	4				
32ME187	PVT	M		1			
32ME188	PVT	A					1
32ME206	FEDERAL	M	19	10	1	1	
32ME209	PVT/FEDERAL	M	24	1	1		
32ME232	PVT/STATE	M	27	23			
32ME233	STATE	M	13	6			
32ME238	FEDERAL	M	2	1			
32ME754	PVT	M	37	3			
32ME755	PVT	M	27	2			
32ME757	PVT	M	18	1			
32ME1486	FEDERAL	P					EFFIGY
32ME189	PVT	M					FARMSTEAD
TOTALS	**41**	**41**	**652**	**119**	**10**	**1**	**3**

Table. 4.2 Cultural Resource Adverse Effects by Alternative.			
Adversely Affected	**Proposed Action Alternative A WMA/Fed Coal**	**No Action Alternative B WMA/Fed Coal**	**Preferred Alternative Alternative C WMA/FedCoal**
Acres	16,271/5,323	13,971/2,371	16,191/5,009
Historic Properties	29/9	28/9	28/9
Sites (All)	222/79	199/57+	220/98
Stone Rings	1,157/379	989/187+	1,068/316
Stone Cairns	372/148	365/127+	341/141
Rock Alignments	14/13	5/4+	15/8
Lined Depressions	9/2	9/2+	9/2
Effigies	0/0	0/0	0/0
Burials	0/0	0/0	0/0
Artifact Scatters	5/3	6/0+	5/4

*Estimated adverse effects to cultural resources within 500feet of the federal/private/state interface and known auxiliary facilities such as haul roads may affect additional sites (+).

alignment, and two rock depressions. Historic Properties over federal coal that could be affected or destroyed are 32ME108, 32ME156, 32ME206, 32ME209, 32ME1554, and 32ME1577. This amounts to some 43 percent (6 of 14) of the Historic Properties located above federal coal. Current plans for the initial mining phase show important effects to the cultural landscape and similar impacts to cultural features. The effects are difficult to estimate, but it is known that proposed haul roads could impact two additional Historic Properties, 32ME238 and 32ME1513.

Coteau's current operation plans indicate that some 57 percent (8 of 14) of the Historic Properties located above federal coal are likely to be destroyed under Alternative B. For all cultural resources within the WMA, 46 percent of the stone rings (204 of 444), 59 percent of the stone cairns (98 of 167), 15 percent of the stone alignments (1 of 13), and 100 percent of the stone-lined depressions (2 of 2) located above federal coal could be destroyed by mining activities, even if no federal coal is leased.

For this analysis, it is assumed that the PSC would require avoidance of the same 780 acres within the WMA as under Alternative A. Within this area, 12 Historic Properties and 17 other archeological sites would be avoided. Twenty-three fewer sites, 168 fewer stone rings, seven fewer stone cairns, and nine fewer stone alignments could be affected if federal coal is not leased. While Table 4.3 indicates that 3,980 acres are avoided, major effects could occur on cultural sites from activities associated with mining, overburden stockpiling, haul roads, stock ponds and the like. As in Alternative A, after mining is completed, land ownership would revert to private (non-corporate) ownership, and access would be by permission only. None of the sites would be actively protected from future disturbances.

Alternative C (Preferred)

Federal coal would be leased (5,334 acres) with additional protections for cultural resources above those provided in the Alternative A (Proposed Action). Following the cultural resource Programmatic Agreement and its approved Management Plan for the WMA, 860 acres of the WMA would be declared off-limits to surface disturbance by mining impacts. By agreement with Coteau, who also controls the surface, 240 acres of Federal coal located beneath the W1/2 of Section 4, T. 145 N., R. 88 W., would be removed from the lease application. Within the remaining 5,334 acre lease proposal, BLM would offer for lease and stipulate no surface disturbance on 81 acres within Section 22, T. 145 N., R. 88 W., to protect 32ME1513; similarly, four acres in Section 14 T. 145 N., R. 88 W., would be offered for lease, but with no surface disturbance to protect the Traditional Cultural Property (32ME1486 effigy). Also to avoid additional significant cultural sites within the WMA, there would be no surface disturbance to 535 acres in Section 9, T. 145 N., R. 88 W., and the 240 acres in the W1/2 of Section 4 T. 145 N., R. 88 W., already removed from the lease application. In response to additional finds of unmarked burials within the WMA, the approved Management Plan agrees to move human remains, when necessary, to an acceptable cemetery set aside on one of the preservation areas of the Trust.

This alternative also includes a donation of lands and monies by the lessee to the Indian Cultural Education Trust. The Trust was established for the purpose of generating income to benefit Indian cultural education. By donating lands to the Trust, a segment of the cultural landscape and the archeological sites they contain would be preserved. These sites, which would be transferred from private ownership

into the Trust, would become readily-accessible to American Indians.

Donor agreement(s) would provide for the lessee's donation of approximately 1,240 acres and a substantial monetary amount into the Trust. Eight Historic Properties, 191 stone rings, 80 stone cairns, nine rock alignments, and two stone-lined depressions and the Traditional Cultural Property and 525 acres of cultural landscape would be preserved. Also, seven Historic Properties, 116 stone rings, 35 stone cairns, one rock alignment, and three artifact scatters would be avoided by mining planned within the WMA.

More specifically, donor agreement(s) would provide for a donation to the Trust holding of lands holding two (32ME1486 and 32ME1513) of 14 Historic Properties located above federal coal. In addition, lands holding four of the 27 Historic Properties located above private or state coal within the WMA would be donated to the trust with similar provisions, including 32ME185, 32ME186, 32ME1578, and 32ME1579. Also within donor agreements, portions of two regionally-important Historic Properties, the Boeckel/ Renner Site (32ME799), which contains a burial mound complex and stone features, as well as a portion of the Bee's Nest Site (32ME175), which contains the remains of Raven Chief, an important Mandan leader, would be preserved. The Boeckel/Renner and Bee's Nest sites are located outside the WMA. A total of five additional non-National Register eligible sites would also be preserved.

Alternative C is the only alternative that actively preserves sites through the Indian Cultural Education Trust. Implementation of the Programmatic Agreement and Management Plan for the WMA preserves 283 stone features while continuing to avoid a significant number (152) of the stone features within the WMA. Combined preservation and avoidance of stone features is approximately twice that as under Alternative A which avoids 197 features, and two-thirds more than as avoided under Alternative B (see Table 4.3 for comparison by alternative).

In addition to physical site preservation, Alternative C would protect American Indian heritage for the future and allow free access by American Indian tribes to such lands for traditional and spiritual activities and collection of traditional plants where access may have been previously denied or limited. As important, the lessee would contribute a substantial monetary amount to the Trust for cultural education seed money. The funds would provide tribal peoples the ability to provide cultural education as they see fit.

Residual Effects

All the prehistoric sites in the WMA contain information that could contribute to the interpretation of cultural heritage by archeological investigation. Under present regulations, sites are evaluated for their potential to contain information related to a set of research questions determined to be important at the time of the site evaluation (Peterson 2000). The passage of time, changing perceptions of significance, or new techniques may supersede these research questions. However, the sites would be destroyed before new questions could be investigated. Therefore, there may be inherent value in all the sites, and their destruction could result in residual impacts even if such sites were not currently determined significant (i.e,. National Register Eligible Historic Properties).

Even on sites that are eligible and mitigated through excavation, recovery of all available information is usually not accomplished because sites are rarely completely excavated. No site in the WMA would be systematically excavated in its entirety. Information contained in remaining portions of a site is lost when mining destroys the site.

Coal mining would sever the societal bond with past ancestors and past lifeways by destroying visible cultural features and the natural landscape. In American Indian culture, visible remnants of archeological sites (e.g., stone rings, cairns, alignments, effigies, and burials) and the site's relationship to the natural landscape are sacred (Deaver 2001). This cultural or ethnographic landscape forms a bond between the Indian community and its ancestors. Stones found in circles/cairns/alignments continue to be as ritually and culturally important today as they were in the past. Cultural representatives and tribal elders have repeatedly expressed concerns about how the loss of these cultural resources would affect their communities. Mitigation is not a reality given this belief system. As a result, residual impacts would occur.

None of the 50 historic period sites were determined eligible for listing on the National Register for the archeological information they contain. One site, the Ricker Farmstead, is listed based on its architectural merit. That site would be destroyed after HABS/HAER documentation. Historic features such as this farmstead, windmills, quarry sites and bridge would no longer be visible as mining removes the structures.

The amount of residual impact is reflected in the total number of sites and features overrun by coal mining activities. Acres disturbed by mining are a means to quantify residual impacts. If impacts are mitigated they no longer are considered residual. Long-term preservation of sites and landscapes could be a means to mitigate for cultural resources. Avoidance of sites and landscapes is not the same as long-term preservation since there is no way to assess whether the sites would be adversely affected by future actions. So, within the context of this analysis, the numbers of impacted sites should be balanced with the numbers preserved/mitigated. The number of adversely affected sites, features, and acres is given in Table 4.2 according to alternative.

Table 4.3 Cultural Resource Avoidance Or Preservation By Alternative					
	Proposed Action Alternative A	No Action Alternative B	Preferred Alternative Alternative C		
	WMA	WMA	WMA		OUTSIDE WMA
	Avoided WMA/Fed Coal	Avoided WMA/Fed Coal	Avoided WMA/Fed Coal	Preserved WMA/Fed Coal	Preserved Trust
Acres	780/248	3,980/3200	560/240	300/85*	225**
Historic Properties	12/5	13/5	7/3	6/2	2
Sites (Prehistoric)	29/12	52/34	22/10	7/2	2
Stone Rings	128/65	222/194	116/35	101/93	90
Stone Cairns	33/19	40/40	35/16	13/10	67
Rock Alignments	7/0	16/9	1/0	5/5	4
Lined Depressions	0/0	0/0	0/0	0/0	2
Effigies	1/1	1/1	0/0	1/1	0
Burials	1/1	1/1	0/0	2/2	2
Artifact Scatters	5/1	5/0	3/0	2/2	0

*Does not include lands that will be reclaimed that will also be included in Trust (Total acres is 720).
**Does not include lands that will be reclaimed that will also be included in Trust (Total acres is 520).

Alternative A (Proposed Action)

This alternative has the most residual effect on the landscape, sites and features. All of the landscape, historic properties, sites and features could be adversely affected by mining activities except for the 780 acres in the WMA's northwest corner and around the TCP and unmarked burial that would be avoided by mining operations. This area contains 12 Historic Properties and 17 additional sites. Those sites and lands avoided by mining would remain in private ownership and use.

Alternative B (No Action)

Under this alternative, federal coal is not leased but residual effects may still occur above federal coal tracts because of the highwall buffer zone and related mining activities (see 2.4). The State of North Dakota would require archeological investigations for those sites determined to be Historic Properties. The 780 acres would be avoided as in the Proposed Action. Those features and lands avoided by mining would remain in private ownership and use. Because of the highwall buffer zone, there are only a few sites and features that would not be affected by not leasing federal coal.

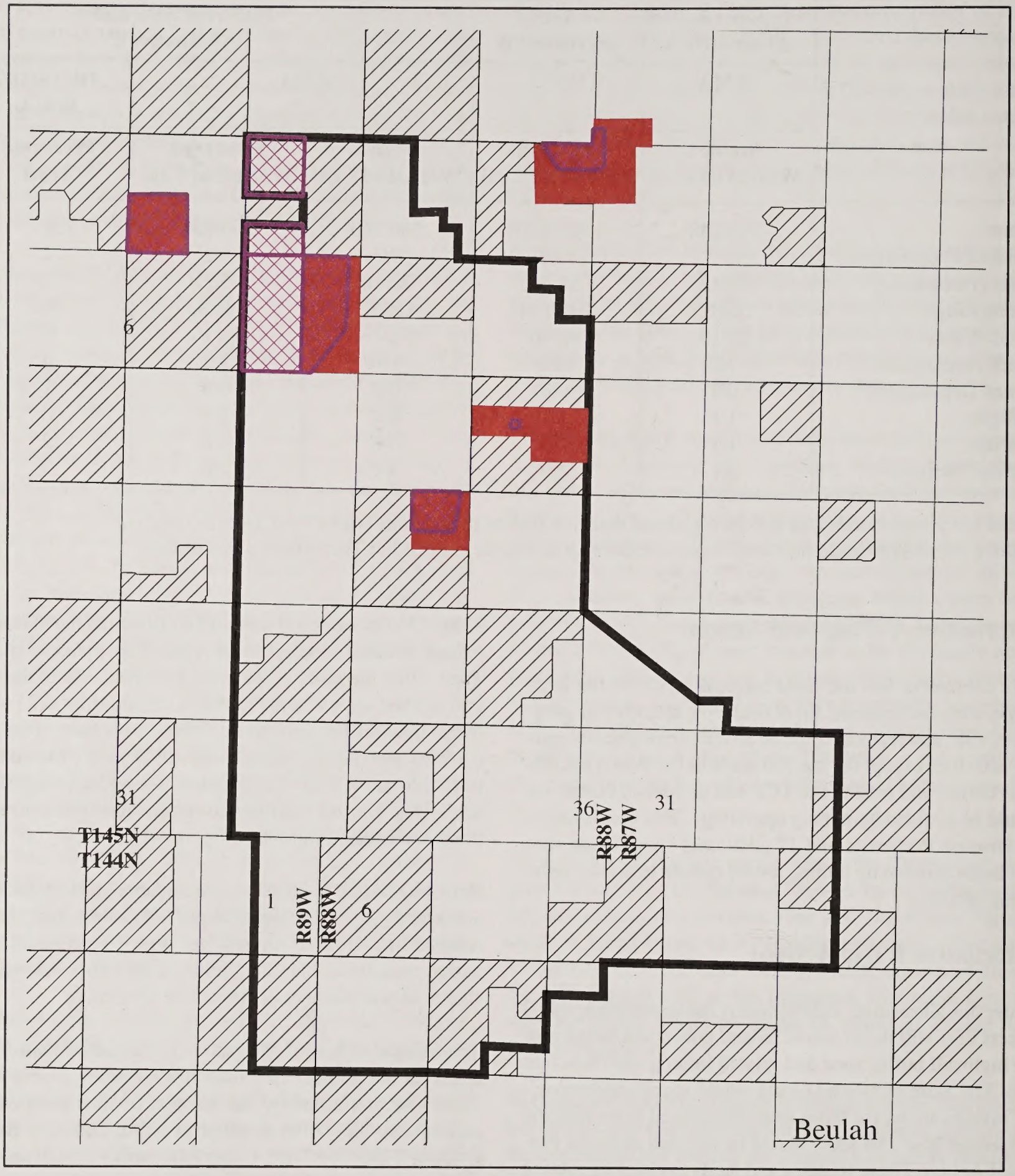
Alternative C (Preferred)

This alternative would have the similar residual effect as the Proposed Alternative except for its additional mitigation measures which preserve the 81 acres on which site 32ME1513 is located. Two hundred fifteen of the 780 acres that are avoided in Alternatives A and B are preserved in the Trust while the other acres remain avoided. With the 215 undisturbed acres within the WMA, an additional 225 acres of the Boeckel/Renner and Bee's Nest sites located outside the WMA would be donated to North Dakota's Indian Cultural Education Trust as mitigation for resource and landscape loss. This is in addition to cultural resource investigations of Historic Properties (Figure 4.1).

Because residual impacts are unavoidable impacts that cannot be mitigated, this alternative provides substantially fewer residual impacts than Alternatives A or B because of mitigation measures. This is supported by Table 4.3, which shows sites avoided or preserved by alternative.

The residual effects of Alternative C are greater than Alternative B but slightly less than Alternative A (Table 4.3). This is accomplished by the addition of sites from within and outside the WMA donated to North Dakota's Indian Cultural Education Trust. Under Alternative C, sites are preserved and accessible rather than being avoided and remaining in private ownership with no control over their disturbance or accessibility. Even with greater adverse effects than Alternative B, Alternative C would have fewer residual impacts on the landscape and archeological remains because of the active preservation of cultural resources. For example, in Alternative A, 128 stone rings are avoided; Alternative B, 222 rings are avoided; however, under Alternative C, 116 rings are avoided, 101 are preserved within the WMA and 90 additional rings outside the WMA are also preserved as

Figure 4.1
Trust Lands and No Surface Disturbance



Legend

- West Mine Area
- Federal Coal
- No Surface Disturbance
- Trust Lands

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part of the mitigation plan. So, under Alternative C, 307 rings are part of mitigation, Alternative A only 128, and Alternative B, 222.

In summary, it was found that significant impacts occur to cultural resources under all three alternatives. Through consultation with tribal representatives, it was determined that mining of the coal would have the greatest affect on the Hidatsa, Mandan, Arikara, Sioux, and Assiniboine. These tribes have well-documented historic ties to the area (Boughton 1999; Deaver 2001; Schneider 1994). Because the surface is privately-owned and the federal coal reserves are not contiguous, ancillary activities associated with mining would destroy a significant number of prehistoric American Indian stone features whether federal coal is leased or not. These stone features are significant remnants of the past.

Cumulative Effects

Arguably, there is inherent value in all cultural sites and their destruction would result in cumulative impacts through the loss of the resource from the mining of coal (see Residual Impacts). The loss of a natural landscape and its relationship to the sites is also a substantial and important impact, especially to the American Indians who have been consulted (Deaver 2001). Cumulative impacts are discussed in terms of past effects, effects of the current undertaking, and foreseeable effects of future mining actions of the Freedom Mine on site loss, sites mitigated, and acres disturbed. These categories can be defined in terms of the portions of the cultural landscape that directly relate to the three geographic areas (1) previous mining of the Freedom Mine, (2) WMA, (3) Mine Area 2 North, which Coteau plans on developing in the near future (Figure 4.2). The cumulative impacts for cultural resources are shown in Table 4.4.

Previously-mined areas encompass approximately 27,809 acres. Within these areas, 233 sites have been affected; only sites 32ME175, 32ME158, 32ME1463, and 32ME1528 or parts thereof have been avoided (Friedlander 2003). Nineteen sites have been excavated (Appendix A). In total, approximately 63 rings, 16 cairns, and 800 square meters outside of visible features were systematically excavated. One site was graded by a road patrol to identify and recover archeological features prior to mining. It should be noted that all Historic Properties were subjected to treatment plans complying with Section 106 of the National Historic Preservation Act.

Depending on the alternative, between 13,971 and 16,271 acres would be adversely affected by mining within the WMA (Table 4.2). Between 199 and 222 sites would be destroyed or affected by the mining (depending on alternative). These sites contain some 652 stone rings, 119 cairns, and 14 other visible features. Forty-one sites within the WMA would be avoided, preserved, or mitigated under all alternatives. Under the Alternative C, donor agreements would preserve eight Historic Properties in the Indian Cultural Education Trust, the Traditional Cultural Property would be preserved, and 27 Historical Properties would be investigated.

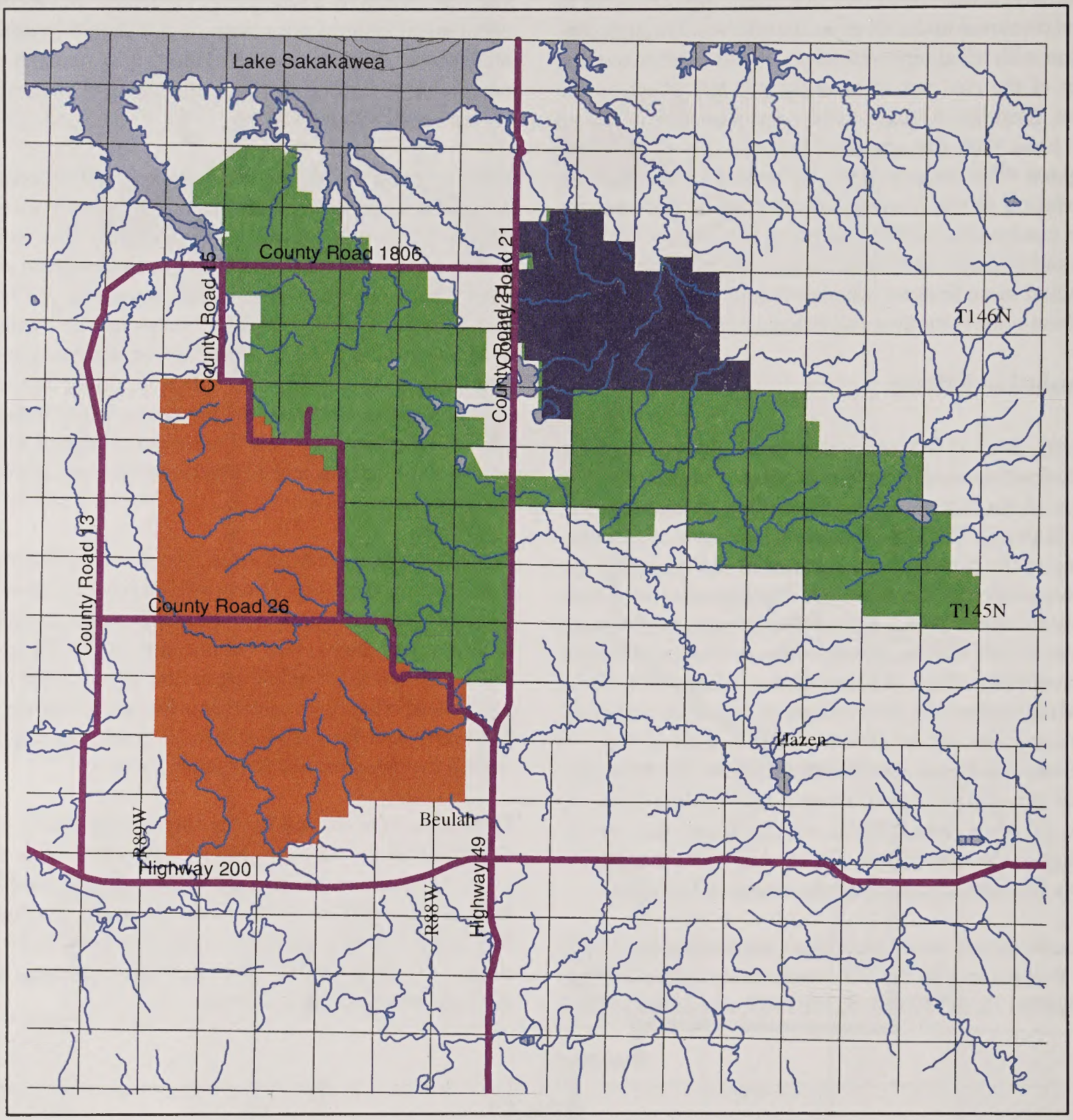
The future mining of Mine Area 2 North would disturb some 5,680 acres and 62 sites. One hundred sixty-two stone rings, 24 cairns, and eight other visible features would be destroyed or affected by the mining. The one site, 32ME254, containing nearly half the visible features has already been investigated under a previous agreement. Recently, nine sites have been mitigated for the Mine Area 2 North, but are not recorded in Appendix A (Friedlander 2004)

From past, current, and for the foreseeable future, mining operations at the Freedom Mine could affect over 50,000 acres. Approximately 546 sites, 367 prehistoric and 179 historic sites, would be destroyed or adversely affected. Visible stone features, including approximately 1,950 stone rings, 541 cairns, and 63 other identified features, will be affected; most will be destroyed.

Table 4.4
Cultural Resource Cumulative Effects

	Previously Mined Areas Areas/Fed Coal	Current WMA WMA/Fed Coal	Future Area 2 N 2 N/Fed Coal	Coteau Mining Region ALL/All Fed Coal
Acres	27,809/7,712	17,051/5,334	5,680/0	50,540/13,046
Total Sites	233/39	251/91	62/0	546/130
Prehistoric Sites	135/24	198/63	34/0	367/87
Historic Sites	98/15	53/28	28/0	179/43
Stone Rings	503/97*	1,285/444	162/0	1,950/541
Stone Cairns	112/30*	405/167	24/0	541/197
Other Features	34/7*	21/12	8/0	63/19
Sites Mitigated	19/3	41/5	9/0	69/8

Figure 4.2
Freedom Mine



Legend

- West Mine Area
- Mine Area 2 North
- Previous Freedom Mine Investigations

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4.9 ENVIRONMENTAL JUSTICE

Impacts Common to All Alternatives

Input from all persons or groups—regardless of age, race, income status, or other social/economic characteristics—was considered. Consultation has been ongoing with representatives of the following tribes: Fort Berthold's Three Affiliated Tribes, Fort Peck's Assiniboine and Sioux, and the Standing Rock Sioux Tribe. Fort Belknap, Oglala Sioux Tribe, Rosebud Sioux Tribe, Santee Sioux Tribe of Nebraska, Yankton Sioux Tribe, Flandreau Santee Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Northern Cheyenne Tribe, Crow Creek Sioux Tribes, and Lower Brule have participated in conversation.

Indian cultural representatives and elders have expressed concerns about the cumulative effects of mining operations on their communities. For most, destruction of any cultural or natural features cannot be mitigated.

Alternative A (Proposed Action)

For American Indians, the societal bond with past ancestors and lifeways would be severed by destruction of visible cultural features and the natural landscape. This is a substantial and important impact, especially to the American Indians who have been consulted (Deaver, 2001). In addition, all prehistoric sites contain information that might contribute to understanding of cultural heritage through archeological investigation. Any information from these sites that is not retrieved under the approved management plan would be lost to future generations. Under this alternative, 5,323 surface acres above federal coal would be disturbed.

Alternative B (No Action)

The impacts would be the same as under Alternative A, except that 2,371 acres would be disturbed.

Alternative C (Preferred)

The impacts would be the same as under AlternativeA , except under this alternative, 5,009 surface acres above federal coal would be disturbed. Additionally, under this alternative, cultural sites would be actively preserved through the Indian Cultural Education Trust (see Chapter 4 Cultural sections).

4.10 SOCIOECONOMICS

Social

Alternative A (Proposed Action)

There would be social impacts to American Indians. These impacts would be greatest under Alternative A and are discussed in the Cultural section of this alternative.

Alternative B (No Action)

The level of mining would stay the same under this alternative. However, local officials are concerned that less money would be available to local governments for road maintenance, schools and other services if the federal coal were not available. Effects to American Indians would be similar as under Alternative A, but less land would be affected (2,373 acres in Alternative B compared to 5,323 acres in Alternative A).

Alternative C (Preferred)

There would be social impacts to American Indians. These impacts are discussed in detail in the Cultural Section (4.8). About 5,009 acres would be affected. But most importantly, under this alternative, sites would be preserved, access would be provided to cultural sites currently held in private ownership, and money would be provided for tribal investment in their cultural and social heritage.

Economics

Coteau would mine the WMA according to approved mining and reclamation plans under all three alternatives. As a result there would be little change in employment; however, the life of mining in the WMA would be determined by the availability of the federal reserves.

Alternative A (Proposed Action)

The leasing of 5,571 acres containing an estimated 93 million tons of federal coal would promote resource conservation by allowing the maximum economic recovery of the federal coal and the intermingled non-federal coal.

According to Coteau's Mine permit application, if the federal coal is leased and a royalty reduction is approved, the amount of federal coal produced in Mercer County could increase from the current average 750 thousand tons, 4.5 percent of the annual total, to approximately 1.6 million tons, 10 percent of the annual total, through 2020 (The Coteau Properties Company, 2002). This amounts to 20 percent of the lease reserves. The remaining 80 percent of the lease reserves would be produced after 2020 through the life of the reserves at levels estimated to range between four and

six million tons per year. There would be a corresponding increase in the federal coal royalty payments. However, there would be no increase in total production or employment as stated in the Mine Permit Application NCMT0201 at Section 3.1.1.2 Federal Coal (The Coteau Properties Company 2002):

> "Mining Federal coal will not result in increased employment, as it is considered a normal part of Coteau's mining operations, not resulting in additional tonnage to be mined. Because no additional production will result from mining Federal coal, there will be no increased demand for public or private entities to provide goods and services to support mining operations."

Alternative B (No Action)

Federal coal would not be offered for lease. However, production would continue in other areas of the mine and the non-federal reserves in the WMA would be mined according to the recently-approved Surface Mining Permit NACT0201 (The Coteau Properties Company 2002). The permit application included the following production schedule for the WMA:

Table 4.5
Section 3.1.1.4 – Coal Production Schedule
(Without Federal Lease)
Note: Subject to change based on customer demands

Year	Total Coal to be Produced	Coal Produced Within Permit (WMA)
2003	15,800,000	0
2004	15,600,000	0
2005	15,600,000	0
2006	15,600,000	0
2007	15,600,000	1,000,000
2008	15,700,000	6,000,000
2009	15,600,000	9,100,000
2010	15,600,000	8,900,000
2011	15,600,000	9,000,000
2012	15,600,000	8,000,000
2013	15,600,000	7,200,000
2014	15,400,000	7,600,000
2015	14,900,000	7,700,000
2016	14,700,000	7,600,000
2017	14,500,000	7,300,000

The mine would continue to supply existing contracts depending on customer requirements. There would be no near-term reduction in production, employment, or severance taxes paid. Long-term, additional reserves would need to be obtained to replace the federal coal that has not been leased in the WMA.

If federal coal is not leased, the loss of the state share of federal royalties would occur and a nonrenewable resource (coal) would not be utilized. Mining in the WMA would be shortened due to loss of the reserves. The cost of mining the non-federal coal in the WMA may increase, and the complete recovery of the non-federal coal may be less likely .

Alternative C (Preferred)

Alternative C would lease 5,334 acres of coal. While approximately 237 acres less would be leased than under Alternative A, only 81 acres less of federal coal would be mined. The other acres were to be avoided because of cultural concerns under both alternatives.

The economic effects spanning the life of the WMA would be negligible. These 81 less acres contain approximately four million tons of the estimated 93 million tons of federal coal within the WMA. Therefore, for this discussion, the impacts would be the same as under Alternative A; mining would proceed according to approved mining and reclamation plans.

4.11 REGULATORY COMPLIANCE, MITIGATION AND MONITORING

All alternatives assume that proper mining and reclamation would be carried out in accordance with existing state and federal regulations. The PSC has primacy over surface mining and reclamation and oversees all aspects of operations. Bonding is required of companies through all phases of mining and reclamation.

Sedimentation ponds and wetlands constructed during reclamation would compensate for mitigation of any wetland habitat removed during mining. North Dakota's law mandating "no net loss" of wetlands and federal Executive Order 11990, dictating wetland protection, require that habitat losses be completely compensated through the reclamation process.

Native prairie and wood/shrub habitat removed by mining would be replaced according to surface owner preference statements. Details on reclamation plans would be worked out between the lessee and PSC in the PAP, with review and approval by appropriate state and federal agencies.

The PSC would handle prime farmlands according to the performance standards found in the Rules Governing the Reclamation of Surface-Mined Land.

4.12 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The major commitment of resources would be the mining and burning of coal for electrical generation and synfuels production. It is estimated that one to two percent of the energy produced would be required to mine the coal. This energy would be irretrievably lost. Mining the coal seam would remove a groundwater aquifer.

Agriculture and wildllife would suffer an irretrievable loss of forage and crop production during mining and early reclamation. The soil profile would be changed on areas disturbed by mining and subsequent reclamation. Soil forming processes, although continuing as soil material is replaced over reshaped overburden, would be irreversibly altered. Replaced soil would be unlike any found in a natural setting.

Mining would disturb the general topography with its pattern of cropland, native prairie, wetlands, and wood/shrub areas. Reclamation would forge a new landscape with its own character.

Any loss of wildlife or human life due to mining and reclamation would be an irretrievable commitment of resources.

For American Indians and local residents, the societal bond with past ancestors and lifeways would be severed by destruction of visible cultural features and the natural landscape. All prehistoric sites within the WMA contain information that might contribute to understanding of cultural heritage through archeological investigation. Any information from these sites that is not retrieved under current mitigation plans would be lost to future generations. Accidental destruction of unknown cultural resources would be irreversible and irretrievable as well.

Alternatives A and C have the nearly the same irreversible and irretrievable commitments of cultural resources on federal tracts. Alternative C sets aside an additional 81 acres of 32ME1513 which saves an additional 108 stone features from being destroyed by mining activities. Alternative C also would mitigate the loss of cultural resources through donation of sites to the Indian Cultural Education Trust. Alternative B has the fewest irreversible and irretrievable commitments of cultural resources, even though substantial impacts would occur above unleased federal coal tracts and the exact number of features affected under Alternative B is difficult to quantify because of incidental impacts.

Mining under Alternative A would disturb 5,323 surface acres above federal coal compared to 2,371 surface acres under Alternative B and 5,009 under Alternative C (Table 4.2). Nine Historic Properties would be destroyed under all alternatives. Seventy-nine cultural sites would be destroyed under Alternative A , while 57 sites would be destroyed under Alternative B, and 98 under Alternative C. Selection of Alternative B would affect approximately half the number of stone rings (187 vs. 379 for Alternative A and 316 for Alternative C) as would Alternatives A or C. Alternative A would affect 148 stone cairns; 127 stone cairns could be affected by Alternative B and 141 for Alternative C. Thirteen stone alignments would be destroyed under alternative A compared to four under Alternative B and eight under Alternative C. Two stone-lined depressions would be destroyed under any alternative. Finally, Alternative A would destroy three cultural material scatters compared to four under Alternative C. No cultural material scatters would be affected under Alternative B.

5.0 CONSULTATION AND COORDINATION

5.1 Federal And State Agencies Consulted

North Dakota Health Department, Division of Air Quality, Bismarck, North Dakota
State of North Dakota, State Historical Society, Bismarck, North Dakota
State of North Dakota, Public Service Commission, Reclamation Division, Bismarck, North Dakota
US Fish and Wildlife Service, North Dakota State Office, Bismarck, North Dakota
Army Corps of Engineers, Bismarck, North Dakota

5.2 List Of Contributors And Reviewers

BLM North Dakota Field Office	
Mike Nash	Technical Review
BLM Montana State Office	
Randy Heuscher	Solid Minerals Coordination
Rebecca Spurgin	Coal Program Coordination
John Thompson	NEPA Coordinator
Gary Smith	Cultural Resources Coordination
Gayle Sitter	Wildlife Coordination
Office of Surface Mining Reclamation and Enforcement, Western Regional Coordinating Center	
Floyd McMullen	EIS Project Coordinator
Foster Kirby	Archaeologist

5.3 List Of Preparers

Name	Education/Experience	Responsibility
BLM North Dakota Field Office		
Lee Jefferis	M.S., B.S. Geology 30 years professional experience	DEIS Project Leader Water Resources
Allen Ollila	B.S. Chemical Engineering 26 years professional experience	FEIS Project Leader
Don Rufledt	B.S. Resource Management (Soils) 30 years professional experience	Soils, Land Use/ Vegetation, Wildlife
Mary Ramsey	B.A. Communications 4 years of professional experience	Writer/Editor
Barry Williams	M.A., B.A. Anthropology 30 years professional experience	Cultural Resources
BLM Montana State Office		
Ed Hughes	B.S. Mineral Economics 30 years professional experience	Economics
Joan Trent	B.A. Psychology M.A. Environmental Science 30 years professional experience	Socioeconomics Environmental Justice
BLM Wyoming State Office		
Susan Caplan	B.S. Meteorology M.S. Air Resource Management 19 years professional experience	Air Quality /Climate

5.4 Tribal Organizations Consulted

Three Affiliated Tribes
Lower Brule
Standing Rock Sioux Tribe
Crow Creek Sioux Tribe
Fort Peck Tribe
Northern Cheyenne Tribe
Fort Belknap
Turtle Mountain Band of the Chippewa Indians
Oglala Sioux Tribe
Santee Sioux Tribe of Nebraska
Rosebud Sioux Tribe
Flandreau Santee Sioux Tribe
Yankton Sioux Tribe

5.5 Comments and Responses to Draft EIS

Introduction

Included in this section are comments received by the Bureau of Land Management and the Office of Surface Mining during the review period for the draft EIS. The Bureau of Land Management and the Office of Surface Mining thank all who took time to share their thoughts and inquires. We have sought to incorporate, modify, and explain these within this document's text.

Some writers addressed large-scale ecological concerns such as acid rain and the global warming. These phenomena are beyond the scope of this document. Some comments were expressions of social values for a particular alternative and provided no substantive information for the analysis. These comments do not require a response; they are included to show convictions and values the public shared.

Responses

The below numbered responses correspond to the numbers located adjacent to the accompanying comment letters within this section. **Bold text** at the beginning of the response demonstrates that the response is to more than one comment letter.

1. **Develop an alternative that protects additional cultural resources within the WMA.**
The alternatives are based on the significant impacts to cultural resources. The preferred alternative parallels the Programmatic Agreement and Management Plan done in consultation with tribal and preservation advocates over a four-year period. Alternative C (Preferred) has been modified to preserve additional stone features within the WMA since the DEIS.

2. **Develop methods for further protecting unmarked burials.**
To date three unmarked burials have been identified within the WMA. Additional proactive identification of unmarked burials has been implemented in Phase II of the Management Plan. These include sensitive excavations at probable locations. Discovered remains will be left in place until it is necessary to relocate. As NAGPRA does not apply to private or state lands, all unanticipated discoveries will follow applicable North Dakota Century Code.

3. **Compliance with Section 106 of the NHPA of 1966 as amended.**
There has been considerable confusion over the protection of cultural resources as affected by the State of North Dakota's Public Service Commission issuing a permit for the mining of private and state coal and the leasing of federal coal. Compliance with Section 106 applies only to the leasing of the federal coal. As there are no federal lands involved in the permit, all the private and state coal may be mined through the PSC's permitting process. Under that process, proposed cultural resource mitigation is reviewed by the State Historical Society, and an approved cultural resource plan is required under N.D.C.C. § 38-14.1-30. There is no federal involvement in that process. The leasing of federal coal requires the federal agencies (BLM and OSM) to take into account the effects of their undertaking on historic properties and afford the Advisory Council on Historic Preservation (Council) a reasonable opportunity to comment, i.e. the Section 106 process.

During the spring of 2000, BLM, OSM, Council, PSC and SHPO (State Historical Society) discussed how the two processes could be intertwined to provide the best-faith effort to take into the account the effects of their separate processes or undertakings on historic properties within the WMA. It was determined that all agencies would look at the entire WMA and develop a single cultural resource management plan regardless of the determination of what coal was mined. Thus, for purposes of Section 106, the WMA became the APE (area of potential effects) for leasing of federal coal. This paralleled the PSC permit area.

In 2000, The Coteau Properties Company provided the agencies with an inventory of archeological resources, and in 2001, it provided a report concerning the tribal significance of sites within the WMA. This second report came from ethnographic evidence and conversations with tribal peoples. Also in 2001, a report on the evaluation of the archeological significance of the sites was completed. That evaluation tested a small sample of approximately 1,700 stone features. In January/February of 2002, OSM, BLM, and SHPO determined which sites were eligible for listing on the National Register of Historic Places. Thirty-nine (39 of 200) prehistoric sites were determined eligible for their archeological information, and one (1 of 50) historic period site was determined eligible for its architectural value. Two other

sites were to be avoided, an effigy and the only recorded unmarked burial. After additional consultation, the effigy was determined to be a Traditional Cultural Property using the criterion of history and design.

In December of 2002, the Adverse Effect determination was finalized, and in January the Council agreed to formally participate in the Section 106 process. Throughout the process a "working group" consisting of the cultural offices of the Three Affiliated Tribes, Fort Peck Assiniboine and Sioux Tribes, the Tribal Historic Preservation Office Standing Rock Sioux Tribe, BLM, OSM, Council, PSC, SHPO, and the National Trust for Historic Preservation held meetings and conversations concerning the process, reports, eligibilities, TCPs, etc. In January of 2003, the ninth version of a Programmatic Agreement and the fourth version of a cultural resource Management Plan were also sent to Fort Belknap, Oglala Sioux Tribe, Rosebud Sioux Tribe, Flandreau Santee Sioux Tribe, Turtle Mountain Band of Chippewa Indians, Northern Cheyenne Tribe, Crow Creek Sioux Tribes, and the Lower Brule for comment. In August of 2003, Coteau had signed a final version of the Programmatic Agreement and associated Management Plan. The following month BLM, OSM, PSC, and SHPO signed the agreement. With the signatures of Coteau and the State Historic Society, a CRMP was in place for the state to issue the PSC permit for the WMA. Major components of the Management Plan include mitigation through archeological investigation of historic properties that will be destroyed by mining and preservation of stone ring and cairn features through donation of lands to the North Dakota Indian Cultural Education Trust (see #6).

In March of 2004, Coteau submitted a preliminary report of the Phase I investigations required by the Management Plan. While the work had completed the requirements of the Management Plan's Phase I, BLM, OSM, SHPO and the Council requested additional investigations of the prehistoric settlement patterns prior to finalizing the Phase II investigations. Coteau agreed to fund those investigations done by an outside investigator, the University of Iowa. On May 4, 2004, the Council signed the Programmatic Agreement.

Additional changes were made to the Programmatic Agreement and Management Plan early in 2005 because of the inability to acquire certain lands referenced in the DEIS for donation to North Dakota's Indian Cultural Education Trust. The modification was developed in continued consultation with the lessee, the North Dakota State Historic Preservation Office, The Advisory Council on Historic Preservation, Three Affiliated Tribes, Fort Peck Assiniboine and Sioux, the Standing Rock Sioux Tribe, and Public Service Commission as part of National Historic Preservation Act compliance for this undertaking.

4. **Clarify each alternative's mitigation measures.**
BLM has rewritten portions of the cultural section to clearly define what will be affected within the WMA and what will be donated to the Indian Cultural Education Trust from outside the WMA (see Table 4.3). BLM has adjusted site numbers and effects as additional information has been received from Coteau and the State Historical Society.

5. **Traditional Cultural Properties defined.**
Traditional Cultural Properties (TCPs) are the most misunderstood and hardest to define category of historic properties. They were originally to designate such significant natural features as Bear Butte, Devils Tower, etc., which were an integral part of a community's folkways and did not easily fit into the already defined National Register property types. They are not synonymous with features having sacredness. TCPs are generally defined as a property eligible for inclusion in the National Register of Historic Places by association with an event or person, have architectural significance, or are important in yielding significant information. They must have defensible boundaries and integrity. They must be associated with the cultural practices or beliefs of a living community, rooted in the community's history, and important in maintaining the continuing cultural identity of the community. TCPs must be a tangible place important to the community today and must have been important for 50 years or more.

BLM does not have sufficient information to designate the estimated more than 1 million stone features originally found across the Great Plains as TCPs. If we look at the defensible boundaries alone, we cannot use the artificially constructed WMA as a boundary; it has no historic integrity. The stone features within the WMA individually do not meet the criterion of the National Register and additional burdens to be TCPs. However, one TCP has been identified within the WMA, the turtle effigy. It was known to members of the Three Affiliated Tribes and utilized in past memory. That is important. TCPs are not "found by pedestrian survey," they are locations that are known to the community.

The Programmatic Agreement and Management Plan provides flexibility, allowing for the Management Plan to evolve as new information surfaces. The plan can accommodate information of additional TCPs as brought forth and documented by any cultural community.

6. **Trust and Donor Agreements explained.**
The Indian Cultural Education Trust was written into law by the North Dakota Legislature during the 2003 legislative session. The trust provides a mechanism for donation of land and/or monies for Indian cultural education. It is being used as an innovative response to the significant loss of the stone features found throughout the WMA. Not only does it provide for some preservation of stone features within

and outside the WMA, but it also provides access to these features. The trust also provides significant money for cultural education. How and what is done is left to the Tribe(s) and the donor (the lessee) to decide. It is an offer by the lessee not the federal government. As long as the donation meets the requirements of the Trust and is consistent with the intent of the Programmatic Agreement and Management Plan, the donation will contribute to the federal responsibility for compliance with the National Historic Preservation Act. While part of the mitigation plan, it is not necessary for the federal government's obligation to meet the requirements of the National Historic Preservation Act. The lands will be donated to the State of North Dakota and managed by the North Dakota State Land Board.

7. **Treaty Rights**.
All federal lands and mineral interests involved in the current coal lease application are open to leasing and development under the North Dakota RMP and in accordance with the Mineral Leasing Act of 1920 and the Federal Coal Leasing Amendments Act of 1976 (FCLAA). Resolving treaty disputes is outside the scope of the EIS process. The EIS analyzes and discloses environmental impacts to resources of concern to Native Americans. However, evaluating whether those resources are covered by the 1868 Fort Laramie Treaty or any other treaty, or whether impacts to those resources violate specific treaty rights, is beyond the scope of the environmental analysis.

8. **Importance of the coal mining industry to the local and regional economy.**
Socioeconomics sections of this document (Sections 3.11 and 4.10) have been revised to acknowledge the contributions of the coal mining industry to the local and regional economy. This includes employment, personal income, and economic activity in the local communities, school districts, and the Bismarck Trade Area. It is also acknowledged that the Freedom Mine contributes to the operating budgets of the county, cities, and school districts through the coal severance taxes returned to Mercer County.

9. **Dependence of the operation of the Freedom Mine on federal coal reserves**.
A number of comments imply that the continued operation of the Freedom Mine is dependent upon obtaining the applied-for federal coal reserves, or that the mine would close prematurely without the federal lease. Federal coal production from 1997-2001 accounted for less than 5 percent of the total coal mined in Mercer County. Mine-specific production data is not available; however, the Freedom Mine accounted for 92 percent of the County's average annual production over the period.

The mine has and will continue to supply coal to its existing customers with or without the federal lease. The recently-approved Surface Coal Mining Permit NACT 0201 allows the mining of non-federal reserves in the WMA. Acquisition of the federal coal reserves would allow the maximum economic recovery of the non-federal reserves. However, there are adequate reserves of coal available in the Renner's Cove coal deposit and the nearby Beulah and Hazen coal deposits to supply the contracts throughout the expected life of the customer plants. This is based upon the BLM's West-Central North Dakota Management Framework Plan, July 1981. At that time there was an estimated 700 million tons of federal coal that could be mined, including 27,971 acres, in these deposits alone. Federal coal ownership accounts for 27 percent of the total mineral acres in Mercer County. However, because of the ownership pattern the percentage of federal coal in the identified deposits would likely be in the 35-40 percent range. If so, there were an estimated 1.75 to 2 billion tons of non-federal reserves in the deposits.

10. Cultural Programmatic Agreement does not obligate BLM to lease coal.
The EIS provides a range of alternatives from which the decision maker will make a selection. The Programmatic Agreement and Management Plan are parts of compliance with the National Historic Preservation Act. They are also the basis on which the Preferred Alternative (Alternative C) is developed. But, signing them does not obligate the BLM to lease coal.

11. BLM decision concerns the leasing of federal coal.
Expansion of the Freedom Mine to include private and state coal reserves was approved by the North Dakota Public Service Commission on April 14, 2004. The BLM must decide whether to lease tracts of federal coal (beneath private surface) within the approved permit area.

12. Reply to Coteau's DEIS review.
Appropriate content and format changes have been made to the FEIS as specified in Coteau's June 29, 2004, letter.

13. Aquifers.
The DEIS does not mention "degradation of water quality 1-2 miles from the proposed mine sites." The DEIS (p. 32, § 4.4, Groundwater) "Low permeability of lignite aquifers suggests that measurable declines in groundwater levels would not extend more than one to two miles from an active mine site." A measurable decline in groundwater level means the water table would be lowered in aquifers near the mine. Water quality in "surrounding rivers and Lake Sakakawea" would not be threatened by seepage of groundwater into an open pit.

TMDL (Total Maximum Daily Load, the maximum amount of a pollutant that a water body can receive and still meet water quality standards) applies to pollution of surface waters. As the DEIS indicates (§ 4.4, Surface Water), surface waters would pass through sediment-control ponds before exiting the permit area. Coteau asserts "discharges from

sedimentation ponds on the mine site have average lower sediment concentrations than monitored surface water run-off from surrounding undisturbed lands." (See Letter No. 21 at point No. 41).

The aquifers of significance in the WMA include shallow lignite beds of the Sentinel Butte Formation. Potentiometric maps of near-surface aquifers in the permit area indicate that water-bearing strata receive water from WMA highlands and distribute it as spring and seeps in and near the West Mine Area. This mapping indicates that groundwater would not affect Lake Sakakawea and the surrounding rivers.

14. Mercury.
Mercury emission section incorporated into 3.4 Air Quality and Climate.

15. Wetlands.
Coteau has addressed the loss of wetlands through mitigation by increasing the size of a wetland complex on reclaimed land in S1/2 § 6, T. 145 N., R. 87 W. A total of 36 acres of seasonal wetlands will be added to the wetland complex, and 40 acres of additional native grassland will be established near the wetland. The reclaimed wetlands represent a net gain in wetland acreage at the Freedom Mine.

May 22, 2004

Coal Team, Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 59601

Greetings:

I am writing to comment on the Coteau Properties Company mining proposal for western North Dakota, involving the expansion of the Freedom Mine in Mercer County. Please be aware that this area is sacred to many different Indigenous nations. The effort from an Indigenous perspective is not just to preserve and protect. There are consequences for disturbing such places. These are the consequences caused by the lack of respect.

A total of 1,349 sites would be destroyed in this plan. According to Byron Olson, the Tribal Archaeologist for the Standing Rock Sioux Tribe, "...the proposed project will destroy more cultural resources than any other current project in the United States." This also includes the destruction of more sites eligible for the National Register of Historic Places than any other project. Olson stated, "the mine expansion will completely destroy twenty-seven NRHP sites." **3** **3**

Other impacts caused by the surface mining need to be addressed as well. These include disruption of key wildlife habitat, the increase of acid rain which would be falling on farms and ranches in North and South Dakota, and long term implications such as the contribution of the coal mine to the destruction of the atmosphere and the resultant increase in global warming.

What stands out in my mind is the total destruction of over 1,300 sacred burial sites which this proposal would accomplish. This is appalling. Where is the respect? **2**

It is my understanding that the Coteau company is trying to get The Three Affiliated Tribes (Mandan, Hidatsa, and Arikara), the Fort Peck Tribes, and the Standing Rock Sioux Tribe to sign a programmatic agreement. Other tribes such as the Oglala Sioux Tribe, the Rosebud Sioux Tribe, and the Yankton Sioux Tribe are being asked to concur.

The agreement creates "the establishment of an Indian Cultural Education Trust as established by [ND] State legislation and implemented under the terms of a donor agreement among The Three Affiliated Tribes, the Fort Peck Tribes and Coteau..." but leaves out other Sioux Tribes. This is a classic divide and conquer tactic in writing. As this area is within the recognized treaty territory of the larger Sioux Nation, the Oceti Sakowin, word is starting to get out, as the Nakota and Dakota tribes from Canada also have vested interests in these sacred places. Their ancestors are also buried here. The Dakota tribes in Minnesota and South Dakota will need to be included, not as well as the Lakotas of South Dakota. **6, 3**

The agreement calls for setting aside less than one percent (1%) of the area for the stockpiling of the stones that are removed from the sacred sites; stone circles, effigies, and burial mounds. Coteau offers to put plaques at this set-aside corner that explains what was removed and destroyed. As an analogy, imagine if there were only 100 graves in Arlington National Cemetery, and Americans were asked to concur with an agreement to destroy 99 of them, and leave only one grave to remember the 99 that were destroyed. Obviously this would be outrageous. However, this is exactly what is going to happen in the Coteau West Mine Area, only worse.

Not only will burial sites be destroyed, but sacred places and archeological sites that are irreplaceable will disappear. Sacred sites cannot be replaced, and the Coteau's attempts at placation amount to insults. **3, 5, 6**

I have learned that Doug Burger from the Bureau of Land Management has stated, "It is our expectation that a programmatic agreement and management plan will be signed prior to our issuing a draft EIS..." As a federal official, he is bound to take an unbiased position until all the federal processes are completed. From Mr. Burger's statement, it would seem he is clearly biased in favor of the Coteau project. The American public is beginning to become clearly aware of the classic maltreatment of Indigenous people by large companies and federal officials when sacred sites and burial mounds are in the way of making money. **3, 10**

At the heart of this issue is the matter of respect. Sacredness may be intangible, but this does not mean it is nonexistent. The ancestors of the Indigenous nations were here for thousands of years. They left these sites as guides for behavior and places for prayer. There were reasons why more than 1300 sacred places are found in this one area. Will the ancestors' messages left in rock circles and effigies be respected and left in place for the generations yet to come? When will concerns about burial places count? When will the understanding of sacredness be respected? **3**

Sincerely,

Curtis A. Ryan
341 Manhattan Avenue #3
Brooklyn, NY 11211-2403
cryan14@nyc.rr.com

Comment Form

Draft Environmental Impact Statement (4/2004)
Prepared by the Bureau of Land Management for
Coteau Properties Company Federal Coal Lease Application,
West Mine Area, Freedom Mine, Mercer County, North Dakota.
Comment period ends June 30, 2004

To ensure we can read your comments, please print or write legibly.

To Whom It May Concern,

I am the son of Ronald S. LittleOwl. My name is Leon Paige Little Owl. In the beginning, Ronald S. LittleOwl and George IronShield were asked to come ~~and~~, see, and interpret the sites. Both men were asked if it was okay to mine the areas under impact today and they said no. Today, all what was said in the beginning was pushed aside and it has come down to a small amount of money that all the enrolled members of the Three Affiliated Tribes (Mandan-Hidatsa-Arikara). The money mentioned about education would be entrusted into a state entity and people ~~with~~ of no tribal descendency would tell the stories about the areas. The native people would see no money. I remember the meetings before about the area and profanity and, anger, molleons would become stronger issues in the rooms. I feel there needs to be more time placed on the table about this issue. If you have any questions or concerns, contact me @ 701-938-4462. Email me @ ghostseed37@Yahoo.com. Address is PO Box 265 Halliday ND 58636.

Signature: Leon Little Owl Date: June 02, 2004

6

May 26th, 2004
Coal Team, Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, N.D. 59601

RECEIVED
BUR. OF LAND MANAGEMENT
NORTH DAKOTA OFFICE
JUN - 7 2004
FIELD MGR.
MIN.
OFF.

Dear Coal Team at the BLM in N.D.,

In the 1890's my Great, Great Grandparents settled in Williston, N.D., where I, myself, was born, VERY close to Mercer County. On behalf of my ancestors, myself and the many Indigenous Red Nations involved We are ALL UNDOUBTEDLY OPPOSED to the Coteau Properties Co. mining proposal for Western N.D. involving

(Pg. 1)

the expansion of the Freedom mine.

Please be aware that this area is Sacred to the Indigenous Nations and affects the Entire World!

There are SERIOUS consequences involved in disturbing such sacred places.

A total of 1,349 sites would be destroyed in this mining plan. According to Byron Olson, the Tribal Archeologist for the Standing Rock Sioux Tribe, "...the proposed project will destroy more cultural resources than any other current project in the United States." This ALSO includes the destruction of more sites (PG.2)

eligible for the National Register of Historic Places than any other project. Olson stated, "the mine expansion will ~~com~~pletely destroy twenty-seven NRHP sites."

Other impacts caused by the surface mining need to be addressed as well. These include disruption of key wildlife habitat, the increase of acid rain which would be falling on farms and ranches in North and South Dakota, and long term implications such as the contribution of the coal mine to the destruction of the atmosphere and the resultant increase (PG.3)

in global warming.

If the BLM of Western North Dakota goes through with this mining project There WILL BE SEVERE CONSEQUENCES that will affect the Entire World!

These sacred sites, stone circles, effigies & burial mounds MUST Remain just as they are, left by the Indigenous People thousands of years ago!

It is an APPALLING disgrace to think a "PLAQUE" in a "set aside corner" can replace and honor the actual Sacredness of these sites. (pg.4)

3, 6

These sites MUST BE LEFT ALONE! They can not be replaced once moved!

RESPECT AND HONOR IS NEEDED!

I have learned that Doug BURGER from the BLM has stated, "It is our expectation that a programmatic agreement and management plan will be signed prior to our issuing a draft EIS..." As a federal official, he is bound to take an unbiased position until all the federal processes are completed. From Mr. Burger's statement, it would seem he is clearly biased in favor (Pg. 5)

3, 10

of the Coteau project. The American public, including myself, is CLEARLY AWARE of the classic mattreatment of Indigenous people by large companies and federal officials when sacred sites and burial mounds are in the way of making money.

Though I live in Brooklyn, N.Y. now I too have roots and buried ancestors in North DAKOTA. My concern is SOO GREAT I will be contacting the NewYork Times and spreading Awareness FAR AND WIDE!

This is not a local issue only. it is a national and International issue.

Respect and Protect these Sacred Sites! If this does not happen DANGERS are imminent!

Sincerely,

Kristin E. Ryan

Kristin E. Ryan
341 Manhattan Ave. #3
Brooklyn, NY 11211
Kristin5@NYC.rr.com

June 6, 2004
Sunday

Dear Mr. Burger,

I am writing to comment on the proposed plan to strip mine coal in Western North Dakota by the Cotesau Properties Co. This strip mining plan must be Stopped now!

The strip mining plan must be stopped because it will destroy 1,349 sacred sites of the Indian people and it will destroy key wildlife habitat. Further the plan should be stopped due to the long-term impact of burning coal and the destruction to the atmosphere through global warming and acid rain, which will impact the farming and ranching economy in a negative way in our nation.

Today is Sunday, a day that most Americans hold sacred. The strip mining plan will destroy religious sites and burial grounds of the first Americans, the Indians. This is wrong!
The plan to set-aside less than 1% of 17,000 acres of sacred ground is wrong!

The money changing Cotesau Properties Company should be thrown out of the sacred sites.
Stop the proposed strip-mining plan now!

Sincerely,
Jaymee Huff 605-624-0061
32735 Ponderosa Drive
BURBANK, South Dakota 57010

3, 6

59

Red Heart Warriors Confederacy U.K

One Earth – One People – Many Spirits

MITAKUYE OYASIN

Christine Hewitt
talking.leaf@cwctv.net

David Watson
watsonfamily29@cwctv.net

18 Heart Street
Burnley
BB10 3AY
Lancs
England
31/5/04

Coal Team,
The Bureau of Land Management
North Dakota field office
2933 Third Avenue West,
Dickinson,
ND 58601

Dear Sirs,

It has come to my attention that the Cotesau Properties Company is seeking County plans on expanding an existing coal strip mine which will destroy approximately 1349 Sacred Ancient Indian Sites. These include burial sites and stone effigies all of which are within the 1868 Fort Laramie Treaty territory. The proposed expansion will destroy more cultural resources than any mines current project within the United States. The proposed site also includes key wildlife habitat and this is totally unacceptable.

Cotesau have offered to set aside less than 1% of the area for stockpiling stone removed from the site and this is not an acceptable offer. This expansion must NOT be allowed to take place, Sacred burial sites and precious cultural and archeological sites will be destroyed and are irreplaceable. All this to make some greedy white man richer color are walking about Ancient Indians, wildlife or the ecology of the area.

Please think again, Some things are more important and more precious than money.

Yours Sincerely
Christine J. Hewitt
RHWC UK.

3, 6

One Earth – One People – Many Spirits

RECEIVED
BUR. OF LAND MANAGEMENT
NORTH DAKOT[illegible] OFFICE
JUN - 8 2004

FIELD MGR.	
AFM. MIN.	
[illegible] OFF.	

Christine Hewitt
talking.leaf@cwcty.net

David Watson
watsonfamily29@cwcty.net

DAVID WATSON
15 NORMANTON GROVE
HOLBECK
LEEDS
WEST YORKSHIRE
LS11 8LD
ENGLAND
31st MAY 2004

MR DOUG BURGER
FIELD MANAGER
COAL TEAM
BUREAU OF LAND MANAGEMENT
NORTH DAKOTA FIELD OFFICE
2933 THIRD AVENUE WEST
DICKINSON
NORTH DAKOTA 58601
U.S.A

GREETINGS MR BURGER

WITH THIS LETTER COMES THOUGHTS AND PRAYERS FOR YOUR WELL-BEING..

SIR. I WRITE TO YOU PERSONALLY AS THE FIELD MANAGER CONCERNING THE PROPOSED STRIP MINING AT COTEAU, NORTH DAKOTA.

AS ASSOCIATE DIRECTOR OF THE R.H.W.C... UK.. I HAVE TO STATE WITH RESPECT. THAT THIS PROPOSAL I FIND HORRIFYING FOR A NUMBER OF REASONS.

1) IT FLAGRANTLY CONTRAVENES THE FORT LARAMIE TREATY OF 1868. WHICH WAS DEFINED AS "UNCEDED INDIAN TERRITORY." 7

2) ASK YOURSELF THIS QUESTION. "DOES THIS PROPOSED EXPANSION BREACH THE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (N.AG.PRA)?. 2

3) A TOTAL OF 27 SITES OF HISTORIC IMPORTANCE WILL BE DESTROYED. 3

4) THIS PROPOSAL WILL DEVASTATE OVER 1,300 CULTURAL RESOUR

5) TO OFFER LESS THAN 1% OF AREA FOR STOCKPILING STONES. SHOWS A TOTAL LACK OF RESPECT AND AN IRREVERENCE TO A CULTURE AND RELIGION OLDER THAN CHRISTIANITY.

6) THIS WHOLE AREA INCLUDES KEY WILDLIFE HABITAT.

7) THE DAMAGE TO THE ECO-SYSTEM WILL BE DEVASTATING AND BEYOND REPAIR.

IN CONCLUSION, I WOULD LIKE TO LEAVE YOU WITH TWO QUOTATIONS.

FEDERAL JUDGE LAWRENCE PIERSOL SAID IN MAY 2003, IN THE CASE BETWEEN THE FEDERAL GOVERNMENT AND THE YANKTON SIOUX TRIBE... "IT WOULD BE A HARD THING FOR ANYBODY TO BE OUT PICKING UP HUMAN REMAINS OF YOUR ANCESTORS, NO MATTER WHAT YOUR FAITH." 2

THE NEW YORK HERALD 1870.. "PALAVER HAS VERY LITTLE EFFECT ON THE INDIAN CHARACTER... FAITHLESSNE. ON OUR PART IN THE MATTER OF TREATIES, AND GROSS SWINDLING OF THE INDIANS.. ARE AT THE BOTTOM OF ALL THIS INDIAN TROUBLE..

ON BEHALF OF MY RELATIONS IN NORTH DAKOTA I ASK YOU NOT TO ALLOW THIS EXPANSION TO TAKE PLACE.

IN TRUTH AND RESPECT.
MOST SINCERELY.

D Watson

Comment Form

Draft Environmental Impact Statement (4/2004)
Prepared by the Bureau of Land Management for
Coteau Properties Company Federal Coal Lease Application,
West Mine Area, Freedom Mine, Mercer County, North Dakota.
Comment period ends June 30, 2004

To ensure we can read your comments, please print or write legibly.

I am concerned about the economic impact it will have on the County if this 88 million ton of coal is not mined. This amounts to about $33 million tax and 70% returns to the County. This is ahuge revenue loss to the County. 8

Signature: Gary Murray Date: 6-9-2004
Mercer County Commission

Lee Jelferis, Project Manager
Doug Burger, Field Manager
Coal Team, Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 59601

June 4, 2004

Re: Expansion of Coteau Mines

Dear Mssrs. Jefferis and Burger,

The expansion of the Coteau Mines threatens to destroy several hundred sacred sites, burial grounds, and stone effigies. The destruction of these Cultural Resources is in direct conflict with the Section 106 Regulations, 36 CFR Part 800 of the National Historic Preservation Act and NAGPRA. 2, 3, 11

I wholly oppose these proposed actions and urge you to issue a criterion of Adverse Effect to the Mine Expansion.

Further, Section 800.5 (a) requires consultation with "*the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, ... The agency official shall consider any views concerning such effects which have been provided by consulting parties and the public.*" Per this legislation, public hearings and comments from all affected tribes, including those from South Dakota, should be included. 3

Respectfully,

Mary Catherine Martin, AIA
670 Candler Street NE
Atlanta, GA 30307
mcm@stella-ltd.com

cc:
Merlan E. Paaverud, SHPO
Tim Mentz, Sr., THPO
Commissioner Susan E. Wefald
Commissioner Kevin Cramer
Commissioner Tony Clark
Charmaine White Face

Sandra K. Bohrer, Auditor

Office of County Auditor

Lana Schneider, Deputy
Pam Drath, Clerk

Mercer County
PO Box 39
Stanton, ND 58571
Telephone 701-745-3292 Fax 701-745-3793
email:sbohrer@state.nd.us

June 16, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 58601

Dear Sirs:

This is in response to publication of an April 20, 2004 Draft Environmental Statement for leasing 90 million tons of federal coal at the West Mine Area, Freedom Mine. Although a significant amount of analysis was conducted on impacts to cultural resources, and proposed plans to mitigate such impacts, virtually no information was detailed on economic and social impacts if the coal were not leased. Some general comments that "local officials are concerned that less money would be available" (p. 43) are wholly inadequate and understate negative impacts by orders of magnitude. In addition, tables on pages 13 and 15 states that socioeconomic impacts from not leasing federal coal would be "moderate, minor, beneficial, short term". Nothing could be further from the truth. Impacts from not leasing federal coal should appropriately be described as major, negative and long-term.

8

The 90 million tons in question is equivalent to about six years of production at Coteau. This is six years of jobs, six years of local income circulating in the communities of Mercer County and six years of severance tax revenues returned to state, county and city governments, not to mention local school districts. In addition, we understand that mining around these tracts significantly raises the cost of mining adjacent coal, hurting the economics of local lignite in competition with other fuel sources.

Using real numbers, about two-thirds of Coteau's employees live in Mercer County, and bring home an annual payroll of about $18 million. Imagine the economic disaster that would occur in Mercer County by losing hundreds of jobs and millions of dollars circulating in our communities. Businesses would fold and home values would plummet.

62

Speaking of business, Coteau spends about $9 million annually on goods and services in Mercer County. Closing the mine six years (or more) earlier than planned would result in more than $50 million in lost business revenue in Mercer County alone.

Coal severance tax money is important to Mercer County. It helps us provide services, roads and other infrastructure vital to our county's residents. Based on current formulas, Mercer County's general fund receives 40% of the 70% share of coal severance tax returned to the county. The remainder goes to county cities and schools. At current rates, 90 million tons would provide $9.5 million to the county general fund. Loss of these funds would be significant.

8

The impact of not leasing this federal coal would mean, at a minimum, a loss of six years of jobs, payroll, business revenue and coal severance tax from coal mined at Coteau, or a total economic impact to Mercer County exceeding $165 million. Certainly this impact cannot be considered "minor" as described in the draft environmental impact statement.

9

Thank you for allowing us the opportunity to provide input into your draft environmental impact statement. We understand and appreciate the importance of protecting significant archaeological sites and important cultural resources, and believe current mining plans address these concerns. It's not unreasonable to expect the final environmental impact statement to give at least the same consideration to people living in Mercer County today as to the people who lived here hundreds of years ago.

Sincerely,

Wayne Entze

Mercer County Commission
Wayne Entze, Chairman
Lyle Latimer
Gary Murray

cc: Governor John Hoeven

pd
File: Coal Severance Tax

146 Main Street E. Box 717 Hazen, North Dakota 58545
Phone (701) 748-2550 Fax 748-2559
Email hazennd@westriv.com

A proud heritage - A promising future

June 16, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Ave West
Dickinson, ND 58601

RE: Draft Environmental Impact Statement for Leasing Federal Coal

Dear Sirs:

Thank you for the opportunity to submit comments regarding leasing Federal coal at The Coteau Properties Company Freedom Mine. The draft environmental impact statement provides a lot of information on archaeological sites and impacts and preservation. However, the draft provides virtually no information about the positive socioeconomic impacts to local towns from the coal mine, specifically Hazen. The Hazen City Commission feels the BLM should include an evaluation of the impacts that would occur if the Federal coal were not leased.

If this coal were not leased Hazen would lose its severance tax share of 90 million tons. This is significant to our town. Our 2003 general fund operating budget was $1,151,000 of which $520,000, or almost half, came from severance taxes paid on coal. Eliminating coal mining would result in a fiscal disaster to Hazen, cutting services and reducing or eliminating infrastructure maintenance and improvements.

Hazen has a 2000 census population of 2,457, of which more than a hundred are employed at The Coteau Properties Company, representing a 2003 payroll of more than $7 million. Eliminating 90 million tons from Coteau's reserves would shut down the mine sooner than planned, eliminating these jobs and removing this money from the community. We understand that this coal represents six years of coal mining, or a total payroll influx of more than $40 million to the Hazen area alone.

8

The positive impact from leasing Federal coal is offset by the negative impact of not leasing Federal coal. Not only would we lose millions of dollars in payroll invested in the community, as well as tax money, but lost jobs means depressed home prices. Businesses would leave and the schools would suffer as well.

In your final environmental impact statement, please address the tremendous negative socioeconomic impacts from not leasing the Federal coal, and consider what that would do to the town of Hazen, as well as surrounding towns. This should be included in your tables on impacts and in Section 4.10, as well as other appropriate sections.

9

Sincerely,

Lonny Adler, President
Hazen City Commission

CC: Governor John Hoven
600 E Boulevard
Dept. 101
Bismarck ND 58505-0001

Hazen Public School District #3

National School of Excellence
Hazen, North Dakota 58545
www.hazen.k12.nd.us

P.O. Box 487
520 1st Ave. NE

Phone: 701-748-2345
Fax: 701-748-2342

June 17, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 58601

Dear Sirs:

This letter is in response to your request for comments concerning a draft environmental impact statement to lease Federal coal in the West Mine Area, Freedom Mine, Mercer County, North Dakota. The Hazen School District requests that your final environmental impact statement more adequately address the socioeconomic impacts to local schools. Currently Table 2.3 lists socioeconomic impacts to employment, housing markets, economic development and revenues and royalties as "minor" under the No-Action Alternative (no leasing). This is incorrect. We expect these impacts would be major, especially as they affect the Hazen school district.

Of Hazen's 735 students, 88 have a parent that works at the Freedom Mine. This is 12% of our entire school enrollment. Anything that could reduce the amount of coal being mined, such as lost reserves through failure to lease coal, could reduce local jobs and significantly impact our student population. Reduced state foundation aid payments would make it more difficult to cover our fixed costs. These are costs that do not fluctuate significantly with changes in student populations. In addition, we understand that the proposed coal lease for 90 million tons represents some six years of production from the Freedom Mine. For the 2002-03 school year we received $574,249 in coal severance taxes, about 12% of our overall budget of $4,714,146. Six years of this would be $3.5 million - the loss of this revenue must be considered a significant negative impact.

8

Thank you for the opportunity to provide input into the environmental impact statement. I trust the final report will consider all impacts appropriately.

Sincerely,

Mike Ness
Hazen School Superintendent

64

Beulah Public Schools

District #27

Wilfred Volesky, Superintendent
204 5th Street N.W.
Beulah, ND 58523-6543
Phone: (701) 873-2261
Fax: (701) 873-5273
Wilfred.Volesky@sendit.nodak.edu
www.beulah.k12.nd.us

June 17, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 58601

RE: Draft Environmental Impact Statement

Thank you for allowing us to provide comments on the Draft Environmental Impact Statement addressing the leasing of Federal coal at the Freedom Mine. We believe that failure to lease this Federal coal could have a significant negative impact on Beulah's schools. For the 2003-04 school year the Beulah school district had an enrollment of 860 students; 131 of these students had at least one parent that works at the Freedom Mine. Obviously with more than 15% of our enrollment directly related to a Coteau employee, actions that would impact the future of the mine would directly impact our schools.

If Federal coal is not leased, we understand this would reduce the longevity of the mine, placing a considerable downward pressure on our student population, and thereby significantly reducing state foundation aid payments, a per-pupil payment to fund school operations. With so many fixed costs to cover, regardless of the number of students, the loss of these payments would put a tremendous strain on our system.

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In addition, 90 million tons represents a significant amount of severance tax revenue returned to the Beulah school district. For example, for the 2002-03 school year we received $689,168 in severance tax monies from coal mining; this represented almost 12% of our overall $5,818,245 budget.

With so many indirect businesses dependent on the local energy industry, such as vendors and suppliers, any reduction in business volume would also result in potential job losses, general population declines, and student losses in our schools. This again would directly negatively impact state foundation aid payments.

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In your tables and narratives discussing impacts, please address the significant negative impacts of not leasing this Federal coal on local school districts.

Yours truly,
Wilfred Volesky

Excellence in Education
Nationally Recognized Blue Ribbon School

North Central Association
Accredited Unit School

CHARACTER COUNTS!
JOSEPHSON INSTITUTE OF ETHICS
TRUSTWORTHINESS • RESPECT
RESPONSIBILITY • FAIRNESS
CARING • CITIZENSHIP
Member of the National CHARACTER COUNTS! Coalition

Beulah Chamber of Commerce

120 Central Avenue North
Post Office Box 730
Beulah, ND 58523-0730
Phone: (701) 873-4585 Fax: (701) 873-5361
e-mail: chamber@westriv.com

June 18, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, North Dakota 58601

Dear Sirs:

On behalf of the Beulah Chamber of Commerce, representing 120 businesses operating in and around the Beulah area, this letter is to provide comments concerning your Draft Environmental Impact Statement for leasing Federal coal in Coteau's West Mine Area. Your final EIS should address the positive economic impacts from mining locally and the major negative impacts that would occur if coal mining were to be discontinued prematurely because Federal coal was not leased. 9

The Coteau Properties Company has a large number of employees that live in and near the Beulah area. They shop here and support our local businesses. In addition, Coteau spends between two and three million dollars annually on supplies and services in Beulah. Elimination of this business activity would have a major impact on us. Finally, the Great Plains Synfuels Plant, the area's largest employer, depends upon lignite as a fuel stock; anything that would threaten their continued use of lignite would threaten jobs and create major negative local impacts. 8

The Beulah Chamber of Commerce recommends that the Bureau of Land Management evaluate all impacts appropriately, including the severe negative impacts of not leasing Federal coal. We believe you will find that leasing this coal is in the best interests of the widest number of people.

Sincerely,

Sandra Eastgate
President
Beulah Chamber of Commerce

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Hazen
Chamber of Commerce
PO Box 423
Hazen, ND 58545

Phone 701-748-6848
hazenchamber@westriv.com
www.hazennd.org

June 18, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, North Dakota 58601

Dear Sirs:

On behalf of the Hazen Chamber of Commerce, representing over one hundred businesses in the Hazen area, comments are being provided regarding the BLM's draft environmental impact statement for leasing federal coal in the West Mine Area at The Coteau Properties Company. We are very concerned that your draft EIS pays scant attention to major negative socioeconomic impacts that would occur to our communities if this coal was not leased and mined. Your report describes impacts as "minor, beneficial" under the No-Action (no leasing) alternative. We frankly do not understand how you determined that not leasing 90 million tons of coal would create a "beneficial" impact on employment, housing and economic development. The actual impact is quite to the contrary, and would be major. 9

More than one hundred Coteau employees make their homes in the Hazen area. They shop here. They eat at our restaurants and use local businesses for their services. They make investments in their homes. Removing 90 million tons of coal from Coteau's reserves would result in job losses, creating lost businesses, depressed housing values and an overall community decline. In addition to indirect effects, Coteau annually spends $5-6 million in Hazen on goods and services. Eliminating six years of mining (the equivalent of 90 million tons) means a direct loss to Hazen's businesses of $30-36 million. This is not a "beneficial" impact! 8

We note the detailed evaluation you conducted for impacts to cultural resources, American Indian culture and heritage, and environmental justice. However, your draft EIS lacks any evaluation whatsoever of impacts to people living here today – people whose lives and livelihood depends on stable and secure jobs from an ongoing energy production facility. The final EIS must give at least equal weight to the tremendous socioeconomic impacts of your decision as it does to archaeological sites.

Sincerely

Myra Axtman, Executive Director
Hazen Chamber of Commerce

Senator Randel Christmann
District 33
401 Third Avenue NE
Hazen, ND 58545-4429
rchristm@state.nd.us

NORTH DAKOTA SENATE

STATE CAPITOL
600 EAST BOULEVARD
BISMARCK, ND 58505-0360

Assistant Majority Leader
COMMITTEES:
Appropriations

June 18, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 3rd Ave. West
Dickinson, ND 58601

Dear Sirs:

This letter is to provide comments on a Draft Environmental Impact Statement prepared for federal coal leasing of some 90 million tons at The Coteau Properties Company Freedom Mine. The Impact Statement assesses the environmental and socioeconomic impact of leasing this coal. It emphasizes impacts to cultural resources. I have attended meetings where these issues have been discussed, and understand the concern for preservation of important archaeological sites. They are important to our heritage, and protection of many of these sites is being provided in Coteau's mining plans.

As North Dakota District 33 State Senator, and Assistant Majority Leader, I have a responsibility to both my district constituents and the entire state of North Dakota. Although your Draft Environmental Impact Statement fully considers impacts to those concerned with site preservation, it falls far short in evaluating the impacts of not leasing federal coal on local residents, or on local or state governments. This should be corrected in the final EIS. 8

Most employees of The Coteau Properties Company live within District 33. Any reduction in coal reserves could reduce the longevity and economic viability of the mine, putting their jobs at risk. In addition, I understand the coal gasification process at the Great Plains Synfuels Plant requires lignite, and cannot use out-of-state sub-bituminous coal for their feedstock. Eliminating 90 million tons of reserves from their supply would impact the coal gasification plant as well, and the hundreds of jobs that it provides. Contractors and suppliers that depend on these industries to provide business would suffer as well. 9

90 million tons represents $33,750,000 in state coal severance tax at today's current rates. 70% of this would return to Mercer County to fund the county government, as well as local cities and schools. The remaining 30%, or $10,125,000 goes to the State of North Dakota, and is needed for continuing operation of our state government. In addition, 90 million tons generates $1.8 million in taxes allocated to the state's lignite research fund, vital for important research into the use and development of this important fuel resource. All of these revenues would be gone if this coal is not leased, and once the surrounding privately owned coal is mined, any future mining of this valuable resource will be economically unviable. 8

In addition to threatened job losses and reduced business activity, the direct loss of tax revenues from not leasing federal coal is a significant and substantial socioeconomic impact that must be addressed in your final Environmental Impact Study. On behalf of the citizens of District 33, as well as the other citizens of North Dakota who benefit directly and indirectly from the mining and use of our state's most abundant energy resource, lignite, I urge you to fully address the socioeconomic impacts of your federal coal leasing actions in a more complete and thorough manner. 8

Sincerely,

Randel Christmann

Randel Christmann
Senator, District 33

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THE CHAMBER
www.bismarckmandan.com

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JUN 29 2004
BUR. OF LAND MGMT.
NORTH DAKOTA FIELD OFFICE

June 23, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 58601

Dear Sirs:

On behalf of the Bismarck/Mandan Chamber of Commerce, this letter is to provide comments regarding the Draft Environmental Impact Statement associated with a Federal Coal Lease Application in Mercer County, North Dakota. According to the Draft EIS, The Coteau Properties Company has applied for a Federal coal lease for some 90 million tons of coal in its West Mine Area.

Although we did not receive a copy of the Draft EIS, one has been made available to us from another source and we've reviewed it. In general, you thoroughly describe cultural resource impacts associated with mining, and how Coteau's mine plan will mitigate these impacts. However, the report lacks any analysis of socioeconomic impacts associated with coal mining.

The impact of coal mining in Mercer County is direct and positive in the Bismarck/Mandan area, and should be addressed as a positive regional impact. Many of Coteau's employees live in Bismarck or Mandan and commute to the mine. The average payroll for these commuting employees over the 2001-2003 period was slightly over $4 million/year.

A substantial and significant amount of business volume is generated by the mine. Over the same three-year period, The Coteau Properties Company has spent on average more than $20 million/year on goods and services from the Bismarck/Mandan area. These numbers do not include the large amount of goods and services bought by Coteau employees and their families that travel to our area.

The importance of a stable and economically viable coal producer so close to Bismarck and Mandan should be stated fully in the final environmental impact statement. The loss of 90 million tons of coal reserves could have a significant negative impact on our community.

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P.O. Box 1675 Bismarck, North Dakota 58502-1675
Phone: (701) 223-5660 Fax (701) 255-6125
E-Mail Address: info@bismarckmandan.com
www.bismarckmandan.com

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We recommend the following specific changes:

1. On page 13 you describe the socioeconomic effects during mining under the No-Action Alternative (no leasing) as "Moderate, beneficial, short term on existing mine area". We would disagree with the conclusion that not leasing coal can have a "moderate, beneficial, short-term" economic impact.

   We understand that this coal represents at least six years of production, the loss of which represents a direct loss of more than $144 million in payroll and business volume in the Bismarck/Mandan area. Therefore the No-Action Alternative would actually create a major and negative long-term impact.

2. Similarly, on page 15, for the No-Action Alternative (no leasing) you describe the impacts on socio-economics as minor, beneficial and short-term for all categories. Again, this is incorrect. For the reasons stated above, the No-Action Alternative will create major negative long-term socio-economic impacts.

3. The discussion of socio-economic impacts on pages 43 and 44 needs to be expanded significantly. As described above, negative local and regional impacts from not leasing Federal coal must be quantified and discussed.

   This must include the actual losses of payrolls, business volumes, and taxes, and how this loss would negatively impact local and regional government budgets, infrastructure, services and residential and business real estate values. The current discussion does not reflect the true extent of regional impacts.

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We ask you to carefully consider the application for the expansion of the Coteau Properties mine. We believe the positive impact of a long-term stable coal supply will provide continued benefits to the Bismarck/Mandan community. Thank you for the opportunity to provide comments on the draft environmental impact statement. Please add our name to your mailing list for this project. If you have any questions please contact me.

Sincerely,

Kelvin L. Hullet

Kelvin L. Hullet, President
Bismarck-Mandan Chamber

"Lona Knight" <tlpiqueen@hotmail.com>
06/25/2004 11:55 AM

To: <lee_jefferis@blm.gov>
cc:
Subject: Stop the Strip Mining

Dear Sir,
Please stop the strip mining that will destroy sacred burial grounds. I am a concerned citizen and wish to protect the environment and also protect ancestral burial grounds. Thank you.
Lona M. Knight

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Nancy Kile
2614 Moose Dr.
Sturgis, SD 57785
605-720-0282

5-24-2004

ATTN: Coal Management Team
Bureau of Land Management
North Dakota Field Office
2933 3rd Ave. W
Dickinson, ND 58601

Gentle persons;

Please do not allow the Freedom Mine to proceed with purposed surface coal mining and reclamation activities that will devastate the environment of 17,051 acres of Indian Country. This project displays blatant disregard for existing natural environments, and will further degrade the future historical significance of this site for Indigenous heritage. Indigenous Peoples populations are growing, our youth are returning to sacred landscapes.

3, 6

Under the United States Constitution, Fort Laramie Treaties, existing federal and state laws, agencies, companies and individual Americans are charged with the responsibility to protect and maintain the integrity of our ancient Indigenous identity. What the Freedom Mine purposes to do is a violation of basic human rights, I ask again, please stop this pathway to ethnic cleansing.

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Sincerely yours;

Nancy Kile

RECEIVED
JUN 29 2004
BUR. OF LAND MGMT.
NORTH DAKOTA FIELD OFFICE

06/27/04

Lee Jefferis
Coal Team
Bureau of Land Managment
ND Field Office
2933 Thirs Avenue West
Dickinson ND 58601

Mr. Jefferis: CERTIFIED MAIL: 7099 3220 0007 0057 5804

Re: Draft EIS, #23-04, West Mine Area, Mercer ND

As an enrolled tribal member of the Three Affiliated Tribes and a resident of the Fort Berthold Indian reservation, I oppose all EIS mining alternatives for the federal coal reserves in the West Mine Area in Mercer ND. The WMA plan, if approved by the BLM, willl have a significant, detrimental, and cumulative impact on the historical, cultural, and social bonds of current and future Three Affiliated Tribe members, with our own historic (documented) homelands. There are 1,732 known culturally significant stone rings, stone cairns, stone alignments, effigy, burial mound, and other known cultural sites. Additionally, future advances in technology will likely identify other cultural sites not yet identified. 3 2

Section 4.8, Alternative C, the 'preferred' alternative, (Residual Effects), acknowledges, "The societal bonds with past ancestors and past lifewys would be severed by the destruction of visible cultural features and the natural landscape by mining the coal." Further, "Cultural representatives and tribal elders have repeatedly expressed concerns about the effects on their communities in losing these cultural resources. Mitigation is not a reality given this belief system".

A recent MniSose Intertribal Water Rights Coalition publication documents that the northern plains are in a five year drought cycle. Further, the Department of Interior projects a 2025 severe water crisis which will have substantial impact on major cities in the Western United States. Coal-based energy depends on the increasingly scarce water resources and continues to contribute significant CO2 emissions into our air. I support sustainable energy development in North Dakota which does not expend our increasingly limited water supply and does not contribute to environmental pollution, as lignite coal does.

The WMA proposal is an environmental justice concern. It will have a disporportionate impact on tribal, low-income residents and similarly affected populations around Fort Berthold. The WMA and surrounding area are also identified as the territory of the Three Affiliated Tribes in the 1851 Fort Laramie Treaty, and, as a result, are still to be protected under our treaty with the United States.

Theodora Bird Bear
P.O. BOx 616'
NEWTOWN ND 58763

69

"Scott Kile" <scottk@rushmore.com>
To: <lee_jefferis@blm.gov>
cc:
Subject: Ethnic cleansing by Coteau
06/28/2004 07:57 PM

I am writing to let my opinion be known on the subject of the Coteau mine project. Since when was the N.D. Public Service Commission given the authority to commit sacrilege?Is this the Public Service Commission or the Big Business Commission? Sacred sites cannot be moved, only destroyed, and this would not be a service to any of the public. Native American's and their Spiritual beliefs have been stepped on for long enough. We have to leave all their sacred sites alone if we ever have a chance at undoing the wrongs our Nation has imposed upon them . Sacred is sacred, and Coteau's idea of sacred is the almighty dollar. 3, 6
Stop Coteau now !
Scott Kile
scottk@rushmore.com
2614 Mose Dr.
Sturgis,S.D. 57785
605-720-0282

COTEAU
THE COTEAU PROPERTIES COMPANY

A SUBSIDIARY OF THE NORTH AMERICAN COAL CORPORATION

FREEDOM MINE
204 County Road 15
Beulah, ND 58523-9475
(701) 873-2281 • Fax (701) 873-7226

June 29, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 58601

Dear Sirs:

This letter is to provide comments regarding Draft Environmental Impact Statement (DEIS) #23-04, for federal action associated with Federal Coal Lease Application NDM 91535, submitted by The Coteau Properties Company (Coteau). We request that these items be addressed as you prepare the Final Environmental Impact Statement (FEIS).

General:

Please review your numbers concerning sites impacted under different alternatives. We are updating our analysis of sites likely to be disturbed or possibly disturbed based on proposed operations, and will forward this information to you in the next two weeks.

Your FEIS should clearly state that the surface coal mining permit has been approved by the state of North Dakota, operations are ongoing in the permit area at this time, and that Coteau currently has approval for operations on private lands over unleased federal coal. Also, the FEIS should note that the Cultural Resources Management Plan (CRMP) has been approved by the North Dakota State Historic Preservation Officer and Director of the State Historical Society of North Dakota, and is currently being implemented. Finally, please state that the Programmatic Agreement, describing the manner in which the CRMP is implemented and outlining agency responsibilities, has been signed by Coteau, the Office of Surface Mining (OSM), the North Dakota State Historic Preservation Officer, the North Dakota Public Service Commission (NDPSC), the Bureau of Land Management (BLM), and the Advisory Council on Historic Preservation, and that execution and implementation of the agreement is evidence that OSM and BLM have satisfied their Section 106 responsibilities for all individual undertakings covered by the agreement.

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Specific Items:

1. The picture of the front cover is of a mining operation, but is not Coteau's Freedom Mine. It doesn't even appear to be a mine in North Dakota. Please remove this picture from the front cover, as it is misleading to many people.
2. Page i, column 1, paragraph 1, line 3: The first sentence states that the Environmental Impact Statement (EIS) analyzes effects from leasing tracts of federal coal adjacent to the Freedom Mine. This is incorrect. Because the West Mine Area permit was approved by the NDPSC on April 14, 2004, the federal coal tracts are located within the Freedom Mine. Please revise this and any other references to a proposed permit area, to describe it as either an existing permit area or approved permit area.
3. Page i, column 1, paragraph 1, line 5: Please correct the name of the company. The correct name is "The Coteau Properties Company", not "Coteau Properties Company."
4. Page i, column 1, paragraph 3, line 3: Please change the reference to the "proposed permit area" to the "approved permit area."
5. Page i, column 1, paragraph 5, bullet 2: Please change the reference to the "proposed permit area" to the "approved permit area."
6. Page i, column 1, paragraph 5, bullet 3 and/or Page 2, column 1, paragraph 4: You state that over 190 letters were mailed to interested parties on March 11, 2003. Please state who received these letters, and their affiliation. We understand that governments, school districts, and chambers of commerce of the closest cities of Beulah and Hazen, which certainly have an interest in the leasing of this federal coal, did not receive a copy of the DEIS. Were they included in the original scoping notice? How many responses were received? Who were they received from? This information was presented during the June 2004 public meetings, and should be included here to demonstrate the type and extent of concern by interested parties.
7. Page i, column 2, paragraph 5, line 7: Please correct the statement that $200,000 would be set aside in an American Indian Education Trust. The approved CRMP states that approximately $200,000 will be donated to the trust. The proper name of this trust is the Indian Cultural Education Trust.
8. Page i, column 2, paragraph 6, line 4: Please correct the statement that leasing would maintain economic stability in the area without placing major additional demands on the existing infrastructure or services, to eliminate the word "major". Leasing and mining of this federal coal could be accomplished without placing any additional demands on existing infrastructure or services.
9. Page 1, column 1, paragraph 1, line 2: Please correct the reference to federal coal adjacent to the Freedom Mine, to within the Freedom Mine.
10. Page 2, column 1, paragraph 1, line 2: The approved permit area is 17,051 acres. Please correct this sentence.

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11. Page 2, column 1, paragraph 8, bullet 3: Please revise this sentence to state "What environmental and socioeconomic effects would likely occur..." Socioeconomic effects have been voiced as a concern by many people not directly associated with the lease applicant, but who may be impacted nonetheless.
12. Page 3 (map): Please correct the map to show ND Highway 1806, and the continuation of paved County Road 15 up to Highway 1806. As currently drawn, it appears to dead-end at Coteau's mine office.
13. Page 4, column 1, paragraph 2: Please correct this paragraph. Coteau submitted the mining permit application to the NDPSC on May 31, 2002, not concurrently with the federal coal lease application, which was submitted in January 2002. Please state that the mining permit was approved on April 14, 2004, and that Coteau currently has approval for surface mining operations on private lands over unleased federal coal.
14. Page 4, column 2, paragraph 3, line 7: Please correct the date of the 2000 meeting organized by the Standing Rock Tribal Historic Preservation Office. It should be May 11, not April 11.
15. Page 4, column 2, paragraph 5, line 10: Please add a statement clarifying that Coteau has also hosted site visits by Native Americans, and has contacted permit area landowners at the request of tribal spiritual leaders for unaccompanied visits on their own. The current language is misleading because it appears that only two field tours have been available.
16. Page 5, column 1, paragraph 4, line 9: Please correct this sentence to read "...West Mine Area..."
17. Page 5, column 2, paragraph 6, bullet 2: Please correct the dates for Mercer County's conditional use approval. The application went before the County Planning and Zoning Board on January 23, 2003, and was approved by the Mercer County Commission on February 4, 2003.
18. Page 7, column 1, paragraph 3, line 5: Please revise the statement that "Mining of non-federal coal could have substantial impacts...", to "Mining of non-federal coal would have substantial impacts..." Revising this language makes clearer that disturbance over unleased federal coal will happen without federal coal leasing, rather than just the possibility of its occurrence. This change would also make the language consistent with captions of Figures 2.1 and 2.2.
19. Page 7, column 1, paragraph 6, line 2: Please capitalize both words in the name "Freedom Mine".
20. Page 7, column 1, paragraph 7, all bullets: Please correct the word "yearend" to "year-end."
21. Page 10, Figure 2.3: Please correct the red cross-hatched area in the legend to read "Proposed Indian Cultural Education Trust Area." These lands will be placed into the trust only if Coteau is successful in their acquisition.

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22. Page 13, Table 2.2, Description of Impacts: Please note under the section AFTER RECLAMATION that changes in post-mining topography, livestock grazing distribution, and field and pasture access will be improved under all scenarios. This is based on the history of reclaimed lands at the Freedom Mine.
23. Page 13, Table 2.2, Description of Impacts: Please revise the discussion under Wildlife – DURING MINING to reflect a projected actual increase in habitat for migratory birds, and increases in waterfowl resting and feeding habitat, contrary to negative impacts stated in the DEIS. These increases are from construction of sedimentation ponds and seeding of erosion controlling grass cover on disturbed areas. There will be more open water and adjacent dense nesting cover available than currently exists in the West Mine Area. This is substantiated by wildlife monitoring conducted on the mine site, and documented in wildlife monitoring reports submitted to the NDPSC.
    Please remove the impact statement that there will be an increased mortality rate of small mammals, amphibians, and reptiles, or provide substantiation for this statement. Again, sedimentation ponds and dense grass cover in associated disturbance areas will provide enhanced habitats that do not currently exist in abundance in the West Mine Area.
    The statement "Temporary displacement of mammals, amphibians, reptiles and birds" should be modified to state "in active areas." In inactive, associated disturbance areas, wildlife habitat is actually enhanced.
    Table 2.3 should be modified in the same manner under wildlife impacts. Although changes in wildlife habitat exist as a result of mining, these changes are often positive and result in increased wildlife usage.
24. Page 13, Table 2.2, and Page 15, Table 2.3, Description of Impacts: Please revise the statements on magnitude and duration of impacts under socioeconomics. Several local residents and government officials have expressed concern that not leasing federal coal would result in major long-term negative impacts on governments, schools, and businesses, contrary to the stated moderate beneficial impacts.
25. Page 15, Table 2.3, Description of Impacts: Please revise the statement associated with cultural resources concerning acres affected, or provide documentation for the assessment that 68,683 acres of "cultural landscape" would be lost. The current permitted area of the Freedom Mine is 43,126 acres, with the expected future overall permitted size to be less than 50,000 acres. The entire permitted area will not be disturbed, so the expected affected area is well under 50,000 acres. In addition, are croplands, which comprise possibly half or more of all permitted lands, considered "cultural landscapes?" If only disturbed native prairies are considered cultural landscapes, then the actual acreage impacted would be closer to a third of the 68,683 acres described in the DEIS.
26. Page 17, column 2, paragraph 3, lines 10-12: Please correct the reference to United Power Association's Stanton Station. They changed their name to Great River Energy. Power from their Stanton Station is provided to Great River Energy's member cooperatives, not to Basin Electric's.

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27. Page 19, column 1, paragraph 1, line 2: Theodore Roosevelt National Park is described as having three units. However, we understand there are only a North Unit and South Unit. Where is the third unit? Please explain or describe.
28. Page 20, column 1, paragraph 1, line 5: Please place a period at the end of the sentence.
29. Page 20, column 2, paragraph 1, line 3: Please note that ammonium sulfate is NH_3SO_4, not just SO_4.
30. Page 20, column 2, paragraph 2, line 3: Please revise the text statement that "…concentrations are about two to five percent…" to be consistent with Table 3.3 on the same page. The table shows monitored SO_2 concentrations at 2-4% of the NAAQS.
31. Page 21, Table 3.4: Comments are provided on trends in temperature and precipitation. Please provide the time span or dates over which these trends were evaluated to provide a point of reference for the reader.
32. Page 21, Table 3.4: Where is the "Badlands Wilderness?" Is this the same as Theodore Roosevelt National Park? We've never heard of this site. Please clarify.
33. Page 27, column 2, paragraph 3, line 8: Please revise this text, as the Mandan, Arikara, and Hidatsa are the constituent tribes of the Three Affiliated Tribes; they are not a separate entity as the current text implics.
34. Page 28, column 1, paragraph 3: You state that "these cultural places become the focus of pilgrimages." This was also stated in the Traditional Cultural Properties report by Sherri Deaver. Please describe the known extent of pilgrimages to specific sites in the West Mine Area prior to Coteau's involvement, and invitations to visit sites. We currently know of no specific visits to specific sites in the past 50-75 years, except for the turtle effigy, mentioned by the late Ron Little Owl. The importance of these sites should be reflected in the history of visitations.
35. Page 31, column 1, paragraph 3, line 1: Please correct the statement regarding shifts at the mine. Some operations run 8 hour shifts, some 10 hour shifts, and some 12 hour shifts. It would be correct to say that "….working 8 hour, 10 hour, or 12 hour shifts from 5-7 days per week, depending on the type of work being conducted and season of year."
36. Page 31, column 1, paragraph 4, line 6: Please delete or modify the reference to blasting creating gaseous pollutant emissions. Although NO_x emissions from incomplete explosive detonation have been recognized as a problem at mines in the Powder River Basin, this has not been recognized as a problem in blasting operations in North Dakota.
37. Page 31, column 2, paragraph 2, line 6, and paragraph 3, line 4: Please correct the statements regarding annual coal production. Coteau's approved air permit to operate describes the mining operation with a maximum production rate of 16.5 million tons/year.
38. Page 31, column 2, paragraph 3, line 1: Please add a "d" to the word "describe" for proper grammar.

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39. Page 32, column 1, paragraph 2, line 4: The DEIS states that the North Dakota Department of Health (NDDOH) is negotiating with the EPA "concerning sulfur dioxide exceedances in areas of unspoiled air quality." These areas should more appropriately be referred to as "Class I Areas."
40. Page 32, column 1, paragraph 4, lines 10-12: The information used to describe potential radius of effect on groundwater supplies from mining is out of date. Please reference Coteau's groundwater probable hydrologic consequences analysis in approved mining permit NACT-0201 (West Mine Area). Based on analyses of monitoring wells placed near active operations, measurable declines in groundwater levels are not expected more than one-half mile to one mile from coal removal operations.
41. Page 32, column 2, paragraph 2: Please note that discharges from sedimentation ponds on the mine site have average lower sediment concentrations than monitored surface water runoff from surrounding undisturbed lands. This information is included in Coteau's application to the NDDOH to amend its North Dakota Pollutant Discharge Elimination System Permit on March 19, 2001. Please revise the statement that increases in sediment load are expected to be minimal to state that based on the history of water discharges at the Freedom Mine, the use of sedimentation ponds is likely to result in water discharges having decreased sediment loads than before mining.
42. Page 33, column 1, paragraph 1: Please note that reclaimed drainage wetlands are likely to have more open water than premining drainage wetlands, and more opportunities for vegetation zonation development, as described in the approved mining permit, and thus are expected to provide more habitat for waterfowl.
43. Page 33, column 2, paragraph 3: The discussion of land use should include a statement that field sizes and shapes will be designed to more efficiently conduct cropping, and that designed pastures and stockpond locations will be more conducive to proper rangeland management than before mining.
44. Page 34, column 1, paragraph 1: Your statement that lands have been modified from native prairie to agricultural uses is misleading – we believe you mean they have been converted from native prairie to cropland. In addition, you state that remaining areas of native prairie have been "converted" to grazing lands. Please restate this to clarify that these lands are used for grazing or hay production. They are not "converted" to grazing, as they have historically and prehistorically been grazed by livestock or buffalo. Also, please note as described earlier, that additional habitat will be created through sedimentation ponds and dense grass cover during mining. This is in contrast to statements that rodents, skunks, snakes, and frogs would be most vulnerable to injury or death by surface mining operations.
45. Page 34, column 1, paragraph 4, line 1: Please insert the word "be" in the first sentence "…this alternative would be as described…"

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46. Page 34, column 2, paragraph 1: Please include a statement that part of the reason for the difficulty that Native Americans have in accessing sites is because the sites are on private land, and require landowner permission to visit them.
47. Page 34, column 2, paragraph 4, line 9: Please place a period at the end of this sentence.
48. Page 37, Alternative C (Preferred): You describe certain lands that would be avoided, lands that would be preserved, and lands that would be placed into the Indian Cultural Education Trust. Please note that lands will be placed into this trust only if Coteau is successful in acquiring them. As described in the approved CRMP, if Coteau is unsuccessful in acquiring designated properties for donation to this trust, provisions exist to negotiate alternative mitigation measures.
49. Page 43, Section 4.9, Environmental Justice: Please include a discussion about input from local communities and environmental justice impacts on local residents as a result of proposed alternatives.
50. Page 43, Section 4.10, Socioeconomics: Please include a more detailed discussion of the socioeconomic impact of proposed alternatives on local residents, local and state governments, schools, etc., based on input received as well as your own analysis.
51. Page 44, Section 4.12, Irreversible and Irretrievable Commitments of Resources: If the federal coal is not leased, it will be mined around, and likely never be mined in the future. This would represent a significant and substantial loss of an important resource. Please address the value of this coal that would be lost and the amount of energy that would never be retrieved under the no leasing alternative.
52. Page 47, Table 5-1: The proper name is The Coteau Properties Company.
53. Page 47, Lists of contributors, consultants and preparers: Please include the list of local organizations and governments consulted in preparation of the DEIS.
54. Page 71, Figure C.1 and Page 72, Figure C.2: Please switch the labels for the Heart River and Knife River on the map.

If you have any questions, please contact me.

Sincerely,

THE COTEAU PROPERTIES COMPANY

Joseph D. Friedlander
Environmental Manager

JDF:lr

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NORTH DAKOTA FIELD OFFICE

TRIBAL HISTORIC PRESERVATION OFFICE
STANDING ROCK SIOUX TRIBE
Administrative Service Center
North Standing Rock Avenue
Fort Yates, N.D. 58538
Tel: (701) 854-2120
Fax: (701) 854-2138

June 30, 2004

Coal Team, Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 58601

Below please find comments from the Standing Rock Tribal Historic Preservation Office regarding Coteau Properties Company Federal Coal Lease Application for West Mine Area Draft Environmental Impact Statement.

The Area of Potential Effect is not clearly defined for this undertaking.

1.2.2 One of the issues selected for detailed study in the DEIS was how unacceptable adverse impacts may be minimized, mitigated or avoided. Whether stone circles and rock cairns are considered as cultural resources or possible grave sites, Standing Rock considers the disturbance and destruction of these sites to be an unacceptable adverse impact and urges BLM to develop an additional alternative that goes further in protecting sites from disturbance. For example, BLM could develop an alternative in which coal is leased with additional "No Surface Disturbance" stipulations placed around rock cairns and ring sites above federal coal. 1

1.3 OSM must make a decision regarding approval or disapproval of a successful bidder's mining plan. Standing Rock finds it reprehensible that the agency would approve of, or recommend for approval, a mining plan that allows for the disturbance and destruction of burial grounds. While the CRMP and DEIS recognize that state burial law applies to these lands, this provides us very little comfort because although this office has repeatedly raised concerns about the potential burials in this area, authors of the CRMP refuse to recognize the possibility that these stone features are burial markers and OSM, BLM, and PSC agents have instead all approved of the current mitigation plan (CRMP) that proposes to simply bulldoze through the majority of these features. Once features are bulldozed over, it is unlikely there will be anything left to identify even as an 'inadvertent discovery'. 2

Tim Mentz, Sr. ◆ Tribal Historic Preservation Officer ◆ e-mail: tmentz@westriv.com
Leo Red Horse, Jr. ◆ Program Assistant ◆ e-mail: lredhorse@westriv.com
Waste Win Young ◆ Tribal Historian ◆ e-mail: wyoung@westriv.com
Byron Olson ◆ Tribal Archaeologist ◆ e-mail: bolson@westriv.com
Mary Wilson ◆ Environmental Protection Specialist ◆ e-mail: mwilson@westriv.com
George Ironshield ◆ Repatriation Coordinator ◆ e-mail: gishield@westriv.com

2.1 Alternative C, according to the DEIS was designed to consider "ways of preserving mitigating, and minimizing impacts to cultural resources which are meaningful to American Indian Tribes of the Great Plains and the historic-preservation community."(p.7)

2.3 Under Alternative A "13 Historic Properties avoided or mitigated for their potential to yield scientific contributions to prehistory." Since there is a substantial difference between the avoidance of and the mitigation of a site, it would clarify this section to enumerate here sites that will be avoided and those to be mitigated. 4

2.4 Are archeological investigations planned for 26 Historic Properties located over non-federal coal stipulated by the lease of Federal Coal? 3

2.5 Alternative C would be more accurately described if the first sentence of second paragraph were changed to read: "This alternative also includes a *voluntary* donation of lands and monies by the lessee to a recently established North Dakota State Indian Cultural Education Trust."

The terms in which the CRMP describes the transfer do not legally obligate Coteau to transfer specific lands or any lands at all into the trust. Some American Indian Tribes to whom the sites are meaningful (one of them being Standing Rock) have been excluded from the donor agreement. 3

Is the transfer of lands to the trust being considered as a mitigation measure for the purposes of Sec106? 3

Table 2.1
The box for Alternative C across from Historical properties over federal coal states: 6 properties donated to the ND trust. On page 8 DEIS states that 4 of the properties above federal coal will transfer. This is a bit unclear. To be more clear count properties outside of the WMA separately from those within the WMA. Does the Bee's Nest site contain 2 properties?. 4

The count of properties donated to the trust in the box for Alternative C across from Historical Properties over non-federal coal is also misleading. Through informal discussions with property owners, it is Standing Rock's understanding that the landowners are at this time unwilling to sell lands containing the Boeckel-Renner site to Coteau. Given that this one site contains 165 stone rings and 24 cairns as well as some other features that archeologists recognize as burials, the inability to include these lands in the trust would at least on a quantitative level significantly alter the amount of cultural resources preserved through the trust. 4

3.9 DEIS recognizes that "all of the tribal consultants have repeatedly stated that all [1,721] of the sites within the project area are culturally important, have traditional cultural associations, or are sacred" however only 1 site was considered eligible for the 5

national register as a TCP (p.28). The DEIS contains no discussion of the plan used to evaluate Traditional Cultural Properties as eligible to the national register. TCP determinations presented in the DEIS are based on an incomplete survey conducted with limited Tribal input. To date only Tribal representatives have visited a small percentage of the features.

4.8
The DEIS states that "a distinction between avoidance and preservation is critical to this analysis" (p.34) and that the Preferred Alternative has "substantially fewer residual impacts than Alternatives A or B because of mitigation measures" (p.40). However, the DEIS remains unclear as to who is accountable for the selection and transfer of properties that that would be preserved by donation. The terms of the donor agreement are also undefined. 6

What role does the Agency play in determining whether properties over federal coal are protected under the trust? 6

Decision makers must be provided with a clear understanding of whether properties and sites described in the CRMP and DEIS will in fact be transferred to the trust and also what authority and obligation the applicant and respective agencies have within that process. 6

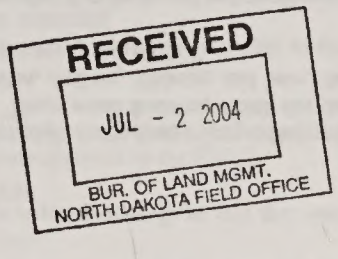
In summation, given that the transfer of lands to the trust is the only essential difference between Alternatives A and C, the ambiguities associated with transfer of lands Alternative C should be clarified in order "to provide a clear basis for choice among options" as outlined 40 C.F.R 1502.14. Standing Rock would also like to see another alternative developed that contains additional No Surface Disturbance Stipulations to protect cultural resources on surface over federal coal based on upcoming site visits by Tribal elders. We hope that features that the elders identify as burials will be recorded as such and once recorded we expect these burials to be afforded protection under NDCC 23-06-27 as described at DEIS **2.4** (p.7-8). 1

I thank you for your time. Your consideration of the above comments is appreciated.

Mary Wilson
NEPA Coordinator

Defenders of the Black Hills
P. O. Box 2003, Rapid City, SD 57709
(605) 399-1868 Fax: (605) 399-1851

June 30, 2004



Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 58601

Dear Sir:

The following are comments regarding the Draft Environmental Impact Statement #23-04, The Coteau Properties Company Federal Coal Lease Application NDM 91535 for West Mine Area, Freedom Mine, Mercer County, North Dakota. 7

3.0 AFFECTED ENVIRONMENT
3.1 Introduction
"The WMA has been privately owned by farmers/ranchers for over 100 years and used to raise crops and livestock."

4.0 ENVIRONMENTAL CONSEQUENCES
4.1 Introduction
"The surface estate of the WMA is almost entirely privately owned."

Prior to the consideration of any coal lease application, the Bureau of Land Management and any other federal agency must assure that the land ownership of the area in question is legal and what it is stated to be. The above statements: "The WMA has been privately owned by farmers/ranchers for over 100 years and used to raise crops and livestock." and "The surface estate of the WMA is almost entirely privately owned." are false. The legal land ownership resides with the Great Sioux Nation under the Fort Laramie Treaty of 1868 and in accordance with the Constitution of the United States and the March 3rd Act of 1871.

To refresh the reader's memory, the Constitution of the United States of America in Article VI (2) states:

> "This Constitution, and the laws of the United States which shall be made in pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding."

Therefore, the violation of a Treaty is a violation of the Constitution of the United States.

Furthermore, according to the March 3rd Act of 1871 (16 Stat.544):

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Defenders of the Black Hills
P. O. Box 2003, Rapid City, SD 57709
(605) 399-1868 Fax: (605) 399-1851

> "No Indian nation or tribe within the territory of the United States shall be acknowledged or recognized as an independent nation, tribe, or power with whom the United States may contract by treaty; **but no obligation of any treaty lawfully made and ratified with any such Indian Nation or tribe prior to March third, eighteen hundred and seventy one, shall be hereby invalidated or impaired.**"

The 1868 Fort Laramie Treaty was made prior to 1871 and by this Act of the United States Congress, the 1868 Fort Laramie Treaty made between the United States and the Great Sioux Nation could not be invalidated or impaired. The March 3rd Act of 1871 was never rescinded. Any succeeding Congressional Acts are then invalid.

Members of the Great Sioux Nation have consistently tried to inform the people being allowed to trespass on the territory of the Great Sioux Nation that a legal and lawful Treaty was in place. The obligation to inform American citizens that they are trespassing resides with the United States Federal government. However, it is also an individual responsibility of American citizens, and in particular, federal officials and public officials, to uphold the US Constitution.

It is not the responsibility of the BLM to decide this issue. However, it is the responsibility of the BLM and its individual employees to insure that the land they are trying to regulate is legally owned as stated by the property owner. In this specific case, the "private landowners, ranchers, and farmers" do not hold legal title to the surface land or the mineral rights beneath the surface. These are still vested with the Great Sioux Nation. Until the land title is settled, the BLM and its individual employees are working outside their legal boundaries and must cease and desist, or consider themselves as parties to an illegal activity.

(The following comments are not to be construed as giving recognition of the legality of the BLM or any of its employees to conduct this activity. Defenders of the Black Hills still holds and maintains that the BLM and its individual employees are acting outside of their legal authority as the land in question belongs to the Great Sioux Nation. The Office of Surface Mining and the ND Public Service Commission are also acting outside of their legal authority.)

1.4 REGULATORY AUTHORITY AND RESPONSIBILITY

"Pursuant to Section 503 of SMCRA, the North Dakota Public Service Commission (PSC) developed, and the Secretary of the Interior approved, North Dakota's permanent regulatory program. This authorized the PSC to regulate surface coal mining operations and the surface effects of underground coal mining on private and State lands within the State of North Dakota. In August 1983, pursuant to Section 523 (c) of SMCRA, PSC entered into a cooperative agreement with the Secretary of the Interior. The PSC now regulates surface coal mining operations and the surface effects of underground coal mining on Federal lands within the State."

"...OSM, BLM, and other Federal agencies review the PAP to ensure that it contains the necessary information for compliance with the coal lease; the Mineral leasing Act of 1920,as amended (MLA); the National Environmental Policy Act of 1969, as amended (NEPA); National

Defenders of the Black Hills
P. O. Box 2003, Rapid City, SD 57709
(605) 399-1868 Fax: (605) 399-1851

Historic Preservation Act of 1966, as amended (NHPA); and other applicable Federal laws and their attendant regulations."

This mixing of federal and state responsibilities under a state agency that is answerable only to state law has raised problems with this specific project. There are tribal members from other Sioux tribes who will be adversely affected by the destruction of the Traditional Cultural Properties in the WMA, but those tribes reside in Canada, South Dakota, Minnesota, and Nebraska.

This raises the question of who is responsible for the enforcement of NEPA, NHPA, and other applicable Federal laws as well as informing all interested parties outside of the state of North Dakota. The Department of the Interior (DOI), the BLM, and the OSM are in error by allowing a state agency to oversee the enforcement of federal laws. How are the DOI, the BLM, and the OSM going to rectify this situation?

1.4.1. Status of Coteau's WMA Application

"Because the surface estate of the WMA is entirely non-Federal...Federal approval is not required for PSC to approve Coteau's pending application."

This again raises the question of enforcement of federal laws. The Department of the Interior (DOI), the BLM, and the OSM are in error by allowing a state agency to oversee the enforcement of federal laws. How are the DOI, the BLM, and the OSM going to rectify this situation?

1.5 Relationship to BLM Policies, Plans, and Programs

"As the proposed lease is on privately owned lands many of the laws and Executive Orders pertaining to Federal lands, such as the Native American Graves Protection and Repatriation Act and Executive Order 13007 do not apply."

This is an extremely important situation where environmental justice for American Indians and religious freedom rights will be denied. This again raises the question of enforcement of federal laws. The DOI, the BLM, and the OSM are in error by allowing a state agency to oversee the enforcement of federal laws. How are the DOI, the BLM, and the OSM going to rectify this situation?

1.6 SCOPING AND AMERICAN INDIAN CONSULTATION

"The imprint of past peoples is found on the WMA landscape mainly in the form of stone features: rings, cairns, alignments, and a single effigy and petroglyph. These stone features, which dot the landscape, mark locations used by the ancestors of the Mandan, Arikara, Hidatsa, and later, the Yanktonai Sioux and other nomadic groups who moved into the are in the 1700s."

The reference for this statement needs to be cited as we find it to be biased and nonfactual.

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Defenders of the Black Hills
P. O. Box 2003, Rapid City, SD 57709
(605) 399-1868 Fax: (605) 399-1851

3.4. AIR QUALITY AND CLIMATE and 4.3 AIR QUALITY

Not answered in this DEIS is the amount of Carbon, Sulfur, and Nitrous Oxides that will be emitted in the atmosphere from the burning of the coal. How do these amounts relate to the current amounts in the atmosphere? If Coteau annually mines 15-16 million tons per year, how much of an increase will there be released into the atmosphere of carbon, sulfur, and nitrous oxides by the burning of 15-16 million tons of coal? What effects will be felt in the global climate from the burning of 15-16 millions tons of coal per year? What are the comparable health related costs for respiratory and other illnesses due to the increase in carbon, sulfur, and nitrous oxides in the atmosphere from the burning of 15-16 million tons of coal per year? What will be the effect to global agriculture by the burning of 15-16 millions tons of coal per year?

3.5 WATER RESOURCES

Ground Water

"Precipitation is the sole source of groundwater for uplands in WMA."
4.4 WATER RESOURCES
Groundwater
"Disturbances from mining may result in altered chemical quality of shallow groundwater aquifers. Increases in sodium, sulfates, and total dissolved solid concentrations have been reported by Groenwald (1980) and Groenwald and Rehm (1979) at other mines in North Dakota with similar overburden. Degradation of water quality at the mine site is likely. Water quality in replaced overburden would be similarly degraded.

"Surface mining would <u>not</u> adversely impact water levels and water quality in deep aquifers." Please cite the source as water quality in deep aquifers will ultimately be impacted due to the removal of the layers directly above them, and the refilling with overburden that does not systematically filter the water as it was filtered prior to removal of the coal. The overburden cannot filter water the same way as coal. More studies need to be completed before the above statement can be taken as fact. Deep aquifers will be impacted.

"Subcoal aquifers are not removed or disturbed by coal mining and so are <u>not</u> impacted by surface mining activity." Again, please cite the source and consider that water quality in deep aquifers will ultimately be impacted due to the removal of the layers directly above them, and the refilling with overburden that does not systematically filter the water as it was filtered prior to removal of the coal. The overburden cannot filter water the same way as coal. More studies need to be completed before the above statement can be taken as fact. Deep aquifers will be impacted and must be given greater consideration as the future generations will not have accessibility to acceptable water from the same deep aquifers.

Surface Water

"The post mining backfill may take in excess of 100 years to reach equilibrium water levels and water quality."

Defenders of the Black Hills
P. O. Box 2003, Rapid City, SD 57709
(605) 399-1868 Fax: (605) 399-1851

This should be totally unacceptable to anyone having any concern for the Missouri and the Mississippi Rivers as the runoff of unacceptable water will be polluting those two major rivers in excess of 100 years. What about the impacts on fish and other waterlife?
What kinds of studies have been done regarding the impacts on fish and other waterlife in the Missouri and Mississippi Rivers?

"Replaced wetlands may not duplicate the exact function and landscape features of all premining wetlands. However, all wetland replacement plans would require approval by the PSC."

Are the members of the PSC recognized authorities in wetlands ecology so that they may make acceptable decisions in wetlands ecology replacement plans?

4.7 WILDLIFE

"...that they are not aware of any T&E species listed for Mercer County frequenting the WMA."

The key words here are 'Mercer County." However, what about species that migrate through the area and drink the surface water in the pits? What about species in the waterways, rivers, that will be impacted by the increased pollution from runoff and air borne pollutants that settle on the water? Long range and wide reaching impacts are an integral part of an Environmental Impact Study, not just the local area.

4.8 CULTURAL RESOURCES

"The Indian Cultural Education Trust was conceived by Coteau and enacted by the North Dakota Legislature in 2003. The purpose of the Trust, managed by the North Dakota State Land Department, would be to hold lands containing cultural resource sites for protection and preservation and to generate income through grazing leases for educational activities of American Indians. The lands would be conveyed into the Trust under the terms and conditions of donor agreements amongst Tribes..."

This idea by the mining company and adopted by the North Dakota Legislature is from the 1800s and should not be allowed the light of day in the year 2004. For too long, more than 100 years, corporations wishing to destroy that which is sacred to American Indians have been allowed to dictate their profit motive through contrived laws to destroy American Indian ways of life. This is a sham of the purpose of legislation and legitimizes 'payoffs.'

Furthermore, it is not up to a mining company to dictate to the Tribes, or rather Nations, anything about donor agreements. This is not only an insult to the Tribes so horribly affected by this very idea, but is an insult to the intelligence and integrity of every voter in the state of North Dakota. It is racist and violates the Constitutional First Amendment right of Freedom of Religion. If these were respected and revered Christian sites, such as the Native place in Bethlehem, or Mount Calvary in Jerusalem, they would not be destroyed. They happen to belong to Nations of people who have a different spiritual understanding. Therefore it is acceptable in this "Christian" state to destroy anything that is not "Christian."

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Defenders of the Black Hills
P. O. Box 2003, Rapid City, SD 57709
(605) 399-1868 Fax: (605) 399-1851

The individual employees of the BLM have a moral, ethical responsibility as federal employees, as Americans, as human beings, to insure that the First Amendment Rights of American Indian people, who are also considered to be American citizens, are not violated.

"Funds accumulated in the Indian Cultural Education Trust would allow American Indians to carry on an understanding of traditional cultures to their own people--knowledge that might otherwise be lost across the generations. In this way the future would serve as a link to the past. American Indian access would be provided to preserved sites, allowing them visitation rights to conduct ceremonies and other activities as they see fit, further maintaining and enhancing their connection to the land..."

This totally, non Indian viewpoint of American Indian culture is an insult to every American Indian that has ties to this sacred area. Removing the stones, and 'allowing' American Indians to have access is not preserving our culture. The tie is also to the actual place where the stone was laid. If you move your eye to the middle of your hand, will it still be an eye? These sacred places are where they are at for a reason. Your eye is where it is at for a reason.

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4.12 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The report entitled: Traditional Cultural Qualities of Sites in the Proposed Coteau Mine Expansion Area (Permit Areas D, H and the West Permit Area) Compiled by Sherri Deaver, Ethnoscience, Inc. for The Coteau Properties Company, page 4.7 states: "The tribal cultural representatives regard continued access to these sites as critical to their continuation as a people. (R. Little Owl 2/1/2001)."

In other words, the Mandan, Hidatsa, Arikara, Sioux, and Assiniboine people will no longer continue as a people if the area is destroyed due to their beliefs and ties to the sacred places and ancestors in the area. For Coteau Properties Company to continue to pursue approval for the destruction of this entire geophysical area, knowing from their own experts that such activities will destroy the tribes, constitutes an act of genocide and is a violation of basic human rights. This is ethnic cleansing at its worst because it is for profit only.

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RECOMMENDATION

Alternative B, No Action, is recommended. Although there is no quantifiable measure of the effects on the Cultural Resources in Alternative B, the surface must not be disturbed and no coal should be mined.

Charmaine White Face

Charmaine White Face, Coordinator
Defenders of the Black Hills

Clean Water Action

Coal Team, Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, ND 58601

Re: Comments on the DEIS for leasing Federal coal in Mercer County, North Dakota

Clean Water Action would like to express their concern on the proposed expansion of mining in Mercer County, North Dakota.

On page 32 under section 4.4 Water Resources/Groundwater mentions degradation of water quality 1-2 miles from the proposed mine sites. We are concerned this will impact the water quality in the surrounding rivers, and Lake Sakakawea. TMDL's for these waters should be investigated to note the effects mining would have on exceeding water quality standards under the Clean Water Act.

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Also on page 32 under the same headings it is mentioned that 12 private wells will be affected, and the company will have to provide an alternate source of drinking water. It is known that all of our water is connected, including groundwater. The movement of groundwater should be studied to note the impacts on other wells, in addition to Lake Sakakawea and the surrounding rivers.

Page 33 mentions wetlands will be removed during mining. Under the Clean Water Act wetlands cannot be removed without replacing them. Wetlands play an important role of water filtration, the control of flooding, and habitat. It is important to make sure this role is maintained in the area.

Finally, the cultural impacts on the surrounding tribes are enormous. Their artifacts should not be destroyed, as they do not belong to the state or federal government.

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Thank you for taking these comments into consideration.

Jessica Ley
Clean Water Action
118 N Broadway #316
Fargo, ND 58102
701.235.5431

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466
Phone 800-227-8917
http://www.epa.gov/region08

JUL 16 2004

Ref: 8EPR-N

Douglas J. Burger, Manager
North Dakota Field Office
Bureau of Land Management
2933 Third Avenue West
Dickinson, ND 58601

Re: Coteau Coal Lease Application – Freedom Mine Expansion DEIS, # 0040186

Dear Mr. Burger:

The Environmental Protection Agency -- Region 8 has reviewed the *Draft Environmental Impact Statement for Coteau Properties Federal Coal Lease Application for West Mine Area, Freedom Mine.* The DEIS assesses the environmental impacts the proposed leasing of 5, 571 acres of federal coal in the proposed 17,000-acre expansion -- West Mine Area (WMA) of the Freedom mine. The WMA expansion increases the life of the Freedom mine until 2030. The surface rights above the federal coal are privately owned.

We submit the following comments in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. EPA's main concerns are impacts to air quality and to peat and fen type wetlands which are unique and irreplaceable.

Air Quality

1. We recommend that the FEIS disclose that emissions from power plants have been identified as a significant source of atmospheric mercury. EPA's web site at http://www.epa.gov/oar/mercury.html has several reports summarizing the environmental impacts of mercury, primarily bioaccumulation in the aquatic food web. The relative levels of mercury emitted as a result of combustion, varies depending on the chemistry of particular coal/lignite deposits and the type of air pollution controls. For purposes of the FEIS, we recommend including any existing information on mercury emissions from the plants burning coal from the Freedom mine and/or in this area of North Dakota. The FEIS should also include a discussion of the current research that is under way to evaluate mercury emissions by the University of North Dakota (UND) or industry. We understand that UND will be studying the injection chlorine into lignite boilers at the Leland Olds and Antelope Valley plants to determine if chlorine addition changes

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mercury removal and/or emissions. The University has some information on mercury emissions from the coal mining industry at http://www.eerc.und.nodak.edu/catm.

2. On page 18 of the DEIS, the first paragraph under "North Dakota and National Ambient Air Quality Standards:" should be revised to delete the references to NAAQS and NDAAQS as absolute upper limits. Alternative wording could be, "North Dakota Ambient Air Quality Standards (NDAAQS) and National Ambient Air Quality Standards (NAAQS) are health-based criteria for the maximum acceptable concentrations of air pollutants at all locations to which the public has access."

Wetlands

3. The DEIS on page 23 mentions five seeps which have created fens or peat wetlands which will be removed as a result of the mine expansion. Fens and/or peatlands are very rare in the Rocky Mountain and plains regions, particularly in dry areas such western North Dakota. Fens/peatlands are wetlands that have primarily organic soil material (i.e., peats or muck) and are created in areas where groundwater discharges to the surface under constant chemical and flow conditions. Because the rate of plant growth exceeds that of decomposition, organic soils form very slowly by accumulation of plant debris. Fens in the Rocky Mountains are believed to develop or accumulate at rates ranging from 4.3 to 16.2 inches per thousand years.

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Fen-type wetlands have been designated by of the Fish and Wildlife Service (USFWS) as Resource Category 1 with respect to the USFWS Mitigation Policy. The mitigation goal of Resource Category 1 is *no loss of existing habitat value* and makes the protection of fens a high priority. All peatland type wetlands such as fens in the plains are rare and irreplaceable resources. The FEIS needs to describe how these rare and high-value wetlands will be avoided and protected, including the hydrogeologic conditions. To our knowledge, it is not possible to mitigate impacts to these types of wetlands by attempting replacement. Therefore avoidance of any impact is the preferred mitigation technique. Mitigation efforts would also need to include preserving the wetlands' hydrologic conditions (upwelling ground water). We recommend that the BLM take every measure possible to avoid impacts to these high-value wetlands and consider the feasibility of excluding the coal underneath the fen and peatland wetlands from leasing. The excluded areas should also include the groundwater systems feeding the fen/peatlands.

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4. EPA would like to find out more about these fens/peatland wetlands before the final EIS is prepared. Please send us any wetlands delineation studies, vegetation and biological surveys, etc. prepared for this area and/or WMA expansion. We would also like to discuss the peatland wetlands resources and any potential mitigation measures in a telephone conference sometime in the near future. We will call to make the arrangements. The information and discussions will help us assess conditions and values of the wetlands and the sustainability of the wetland systems.

5. Fens only develop when unique hydrogeologic conditions exist. The most critical condition for preserving fens is groundwater discharge and histisolic conditions. In some cases, fens have been destroyed by a minor decline in the potentiometric surface (head)

for the aquifer. This can happen when the surrounding topography is changed through mining or when the underlying aquifer is dewatered changing the relative heads between the fen and the lower aquifers. The FEIS should also more closely evaluate the hydrologic conditions that have created these unique wetlands and any aspect of the proposed mine expansion that would disrupt these conditions.

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6. The rule of thumb defining fens as peat lands with more than 16 in. of organic material (mentioned on page 23 of DEIS) may not be appropriate for dry areas such as the WMA. If the main factor for classifying the four wetlands identified as peatlands instead of fens was depth of organic material, there may be other factors that would still indicate that these wetlands are fens.

Based on the procedures EPA uses to evaluate the potential effects of proposed actions and the adequacy of the information in the DEIS, the proposed alternative will be listed in the Federal Register in the category EC-2 (EC - Environmental Concerns, 2 - Insufficient Information). This rating means that based on the available information, the review identified environmental impacts that should be avoided in order to fully protect the environment and the DEIS does not contain sufficient information to thoroughly assess environmental impacts that should be avoided to fully protect the environment.

We appreciate your consideration of our comments. If you have any further questions, please contact Dana Allen of my staff at (303) 312-6870. Again, we would appreciate the opportunity to discuss these concerns with you. We will call you in the near future to arrange a conference call.

Sincerely,

Larry Svoboda
Director, NEPA Program
Office of Ecosystems Protection
and Remediation

Enclosure

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— State of —
North Dakota
Office of the Governor

John Hoeven
Governor

July 20, 2004

Coal Team
Bureau of Land Management
North Dakota Field Office
2933 Third Avenue West
Dickinson, North Dakota 58601

Dear Sirs:

Thank you for requesting my comments concerning the April 20, 2004 Draft Environmental Impact Statement (DEIS #23-04) for The Coteau Properties Company Federal Coal Lease Application NDM 91535, to lease approximately 90 million tons of Federal coal at the Freedom Mine. This is an important action that deserves serious consideration.

Our review of the DEIS indicates you have conducted a thorough evaluation of impacts on cultural resources under different scenarios. Preservation of the rich heritage of North Dakota's Native Americans is a necessary and valuable component in our state's energy resource development. It appears that plans developed by The Coteau Properties Company to avoid and preserve sites will serve that purpose. In addition, development of an Indian Cultural Education Trust, coordinated through legislation sponsored by The State Board of University and School Lands in 2003, will assure long-term protection for, and perpetual Native American access to, sites considered especially valuable or sensitive.

Although the DEIS provides a detailed analysis of cultural resources, the socio-economic impacts of different leasing scenarios was barely addressed. These impacts are tremendous, and must be considered in much greater detail as you prepare the Final Environmental Impact Statement.

Approximately 90 million tons of lignite is being considered for leasing. This would directly generate $33,750,000 in coal severance tax at current rates. This is distributed between the state government and schools, cities and the county government in Mercer County. Obviously, the loss of this amount of tax revenue would be a major negative impact.

600 E Boulevard Ave
Bismarck, ND 58505-0001
Phone: 701.328.2200
Fax: 701.328.2205
www.discovernd.com

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The Coteau Properties Company is a major purchaser of goods and services in North Dakota. For example, in 2003 their purchases generated over a million dollars in sales and use tax for North Dakota's citizens.

The Freedom Mine is North Dakota's largest coal mine, employing hundreds of people. According to published research by North Dakota State University[1], for every direct job in the lignite industry, four+ jobs are required for indirect support. The impact of the Freedom Mine may be well over 1,000 jobs, and the families that depend on these jobs.

Because the Great Plains Synfuels Plant requires lignite coal as a feedstock, any decisions affecting that feedstock supply, such as the leasing of 90 million tons of lignite, have a direct bearing on future production at this plant. This facility plays a key role in North Dakota's energy economy, so your analysis must consider impacts here as well.

Just as meaningful as the protection of cultural resources and Native American heritage are the jobs and economic activity generated by lignite mining in western North Dakota. I urge you to give consideration to these factors as you prepare the Final Environmental Impact Statement for this action of such importance to our state.

Sincerely

John Hoeven
Governor

38:51:35

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7.0 GLOSSARY

aboriginal - Related to early or primitive cultures in a region.

alluvial valley floor (AVF) - An area of unconsolidated stream-laid deposits holding streams with water availability sufficient for subirrigation or flood irrigation agricultural activities (see 30 CFR 701.5).

alternative - In terms of the National Environmental Policy Act, one of several substitute or alternate proposals that a federal agency is considering in an environmental analysis.

ambient - Surrounding conditions (or environment) in a given place and time.

annual precipitation - The quantity of water that falls yearly in the form of rain, hail, sleet, and snow.

approximate original contour - Post-mining surface configuration achieved by backfilling and grading of mined-out areas so that the reclaimed land surface resembles the general surface configuration of the land prior to mining (see 30 CFR 701.5).

aquatic - Living or growing in or on the water.

aquifer - A layer of permeable rock, sand, or gravel that stores and transmits water in sufficient quantities for a specific use.

ash - The residual non-combustible matter in coal that comes from included silt, clay, silica, or other substances. The lower the ash content, the better the quality of the coal.

buffer zone - An area between two different land uses that is intended to resist, absorb, or otherwise preclude development or intrusion between the two use areas.

clinker (scoria) - Baked and fused rock resulting from in-place burning of coal deposits.

contiguous - Lands or legal subdivisions having a common boundary, lands having only a common corner are not contiguous.

cooperating agency - An agency which has jurisdiction by law in an action being analyzed in an environmental document and who is requested to participate in the NEPA process by the agency that is responsible for preparing the environmental document [see 40 CFR 1501.6 and 1508.5].

Coteau Properties Company – a subsidiary of The North American Coal Corporation, is engaged in the mining of coal used by electric utilities for power generation and by a coal gasification facility. Coteau's Freedom Mine in Beulah, North Dakota, began mining in 1983. Freedom Mine delivers over 16 million tons of coal per year, making it the largest lignite mine in the United States in deliveries. The operation utilizes two Bucyrus-Erie 2570 draglines for overburden removal and reclaims about 600 acres of land annually.

cultural resources - The remains of human activity, occupation, or endeavor reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that reveal the nature of historic and prehistoric human events. These resources consist of (1) physical remains, (2) areas where important human events occurred, and (3) the environment immediately surrounding the resource.

cumulative impact - The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

deciview (dV) - A general measure of view impairment (13 deciview equals a view of approximately 60 miles) caused by pollution.

direct (primary) impact - An impact caused by an action that occurs at the same time and place as the action (see 40 CFR 1508.8).

discharge - Any of the ways that ground water comes out of the surface, including through springs, creeks, or being pumped from a well.

dragline - A type of excavating crane that casts a rope- or cable-hung bucket a considerable distance, collects the dug material by pulling the bucket toward itself on the ground with a second rope or cable, elevates the bucket, and dumps the material on a backfill bank or pile.

ecosystem - A system formed by the interaction of a community of organisms with their environment.

edaphic - Related to or caused by particular soil conditions.

erratic- a rock fragment carried by a glacier or by floating ice and deposited when the ice melted at some distance from the outcrop from which the fragment was derived.

erosion - The wearing away of the land surface by running water, wind, ice or other geologic agents.

excavation (archeological) - The scientifically controlled recovery of subsurface materials and information from a cultural site. Recovery techniques are relevant to research problems and are designed to produce maximum knowledge about the site's use, its relation to other sites and the natural environment, and its significance in the maintenance of the cultural system.

fair market value - The amount in cash, or in terms reasonably equivalent to cash, for which in all probability a coal deposit would be sold or leased by a knowledgeable owner willing but not obligated to sell or lease to a knowledgeable purchaser who desires but is not obligated to buy or lease.

fen – A waterlogged, spongy groundmass containing alkaline, decaying vegetation characterized by reeds and which may develop into peat. It sometimes occurs in the sinkholes of karst regions. Cf: bog.

floodplain - The relatively flat area or lowland adjoining a body of flowing water, such as a river or stream, which is covered with water when the river or stream overflows its banks.

forage - Vegetation used for food by wildlife, particularly big game wildlife, and domestic livestock.

glacial till - Material deposited from glaciers consisting of an unsorted mixture of clay, sand, gravel, and boulders.

ground water - Subsurface water that fills available openings in rock or soil materials to the extent that they are considered water saturated.

habitat - A place where a plant or animal naturally or normally lives and grows.

HABS/HAER - Historic American Building Survey/Historic American Engineering Record

hazardous waste - Those materials defined in Section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, and listed in 40 CFR § 261.

Historic Property – A site that has been determine eligible for or is listed on the National Register of Historic Places.

human environment - The natural and physical environment and the relationship of people with that environment (see 30 CFR 1508.14).

hydraulic conductivity - The capacity of a medium to transmit water; permeability coefficient. Expressed as the volume of water at the prevailing temperature that will move in unit time under a unit hydraulic gradient through a unit area. Units include gallons per day per square foot, centimeters per second.

hydraulic - Pertaining to fluid in motion, or to movement or action caused by water.

in-place coal reserves - The estimated volume of all of the coal reserves in a lease without considering economic or technological factors that might restrict mining.

interdisciplinary - Characterized by participation or cooperation among two or more disciplines or fields of study.

intermittent stream - A stream that does not flow yearround but has some association with ground water for surface or subsurface flow.

lease (mineral) - A legal document executed between a mineral owner or lessor and another party or lessee which grants the lessee the right to extract minerals from the tract of land for which the lease has been obtained [see 43 CFR 3400.0-5(r)].

lignite - A soft coal, usually dark brown and often having a woody texture.

loam - A rich, permeable soil composed of a mixture of clay, silt, sand, and organic matter.

maintenance tract - A federal coal tract that would continue or extend the life of an existing coal mine.

maximum economic recovery (MER) - The requirement that, based on standard industry operating practices, all profitable portions of a leased federal coal deposit must be mined. MER determinations will consider existing proven technology; commercially available and economically feasible equipment; coal quality, quantity, and marketability; safety, exploration, operating, processing, and transportation costs; and compliance with applicable laws and regulations [see 43 CFR 3480.0-5(a) (24)].

methane - A colorless, odorless, and inflammable gas; the simplest hydrocarbon; chemical formula = CH_4. It is the principal constituent of natural gas and is also found associated with crude oil and coal.

mineable coal - Coal that can be economically mined using present day mining technology.

mining permit - A permit to conduct surface coal mining and reclamation operations issued by the state regulatory authority pursuant to a state program or by the Secretary pursuant to a federal program (see 30 CFR 701.5).

mitigation - An action to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

National Register of Historic Places (NRHP) - A list of districts, sites, buildings, structures and objects important in American history, architecture, archeology and culture maintained by the Secretary of the Interior. Expanded as authorized by Section 2(b) of the Historic Sites Act of 1935 (16 U.S.C. 462) and Section 101(a) (1) (A) of the National Historic Preservation Act.

NEPA process - All measures necessary for compliance with the National Environmental Policy Act of 1969 (see 40 CFR 1508.21).

No Action alternative - An alternative where no activity would occur. The development of a No Action alternative is required by regulations implementing the National Environmental Policy Act (40 CFR 1502.14). The No Action alternative provides a baseline for estimating the effects of other alternatives.

outcrop - A rock formation that appears at or near the surface; the intersection of a rock formation with the surface.

overburden - Material of any nature, consolidated or unconsolidated, that overlies a coal or other useful mineral deposit, excluding topsoil.

perennial species (vegetation) - Vegetation that lives over from season to season.

perennial stream - A stream or part of a stream that flows continuously during the calendar year as a result of groundwater discharge or surface runoff.

permeability - The ability of rock or soil to transmit a fluid.

permit application package - A proposal to conduct surface coal mining and reclamation operations on federal lands, including an application for a permit, permit revision, or permit renewal and all the information required by SMCRA, the applicable state program, any applicable cooperative agreement, and all other applicable laws and regulations including, with respect to federal leased coal, the Mineral Leasing Act and its implementing regulations.

permit area - The area of land, indicated on the approved map submitted by the operator with his or her application, required to be covered by the operator's performance bond under the regulations at 30 CFR Part 800 and which shall include the area of land upon which the operator proposes to conduct surface coal mining and reclamation operations under the permit, including all disturbed areas (see 30 CFR 701.5).

point source (pollution) - A point at which pollution is added to a system, either instantaneously or continuously. An example is a smokestack.

prime and unique farmland - Those lands, which are defined by the Secretary of Agriculture in 7 CFR, part 657 (*Federal Register* Vol. 4 No. 21) and which have historically been used for cropland (see 30 CFR 701.5).

Programmatic Agreement and Management Plan - Documents developed following the Section 106 process of the National Historic Preservation Act of 1966, as amended (NHPA). The programmatic agreement is a promise by the signatures to complete certain preservation tasks as elaborated in the management plan for cultural resources to comply with the NHPA. These documents were developed in consultation between BLM, The Coteau Properties Company, The Advisory Council on Historic Preservation, the State Historic Preservation Office, the North Dakota Public Service Commission, the Office of Surface Mining and Reclamation, the Three Affiliated Tribes, Fort Peck Assiniboine and Sioux, the Standing Rock Sioux Tribe, and others.

proposed action - In terms of National Environmental Policy Act, the project, activity, or action that a federal agency proposes to implement or undertake and which is the subject of an environmental analysis.

qualified surface owner - The natural person or persons (or corporation, the majority stock of which is held by a person or persons otherwise meeting the requirements of this section) who:

(1) Hold legal or equitable title to the surface of split estate lands,

(2) Have their principal place of residence on the land, or personally conduct farming or ranching operations upon a farm or ranch unit to be affected by surface mining operations; or received directly a significant portion of their income, if any, from such farming and ranching operations; and

(3) have met the conditions of (1) and (2) above for a period of at least three years, except for persons who gave written consent less than three years after they met the requirements of both (1) and (2) above [see 43 CFR 3400.0-5(gg)].

raptor - Bird of prey, such as an eagle, falcon, hawk, owl, or vulture.

recharge - The processes by which groundwater is absorbed into a zone of saturation.

reclamation - Rehabilitation of a disturbed area to make it acceptable for designated uses. This normally involves regrading, replacement of topsoil, revegetation and other work necessary to restore the disturbed area for post-mining use.

record of decision (ROD) - A document separate from, but associated with, an environmental impact statement that

publicly and officially discloses the responsible official's decision on the proposed action (see 40 CFR 1505.2).

recoverable coal - The amount of coal that can actually be recovered for sale from the demonstrated coal reserve base.

resource management plan (RMP) - A land use plan, as prescribed by FLPMA that directs the use and allocation of public lands and resources managed by BLM. Prior to selection of the RMP, different alternative management plans are compared and evaluated in an environmental impact statement (EIS) to determine which plan will best direct the management of the public lands and resources.

revegetation - The reestablishment and development of self-sustaining plant cover following land disturbance. This may occur through natural processes, or the natural processes may be enhanced by human assistance through seedbed preparation, reseeding, and mulching.

riparian - The area adjacent to rivers and streams that lies between the stream channel and upland terrain and that supports specific vegetation influenced by perennial and/or intermittent water.

runoff - That portion of rainfall that is not absorbed; it may be used by vegetation, lost by evaporation, or it may find its way into streams as surface flow.

scoping - A public informational process required by the National Environmental Policy Act to determine private and public concerns, scope of issues, and/or questions regarding a proposed action to be evaluated in an environmental impact analysis.

scoria (clinker) - Baked and fused rock resulting from in-place burning of coal deposits.

sedimentation pond - An impoundment used to remove solids from water in order to meet water quality standards or effluent limitations before the water leaves the permit area (see 30 CFR 701.5).

semi-arid - A climate or region characterized by little yearly rainfall and by the growth of a number of short grasses and shrubs.

shale - A very fine-grained clastic rock or sediment consisting predominately of clay-sized particles that is laminated, lithified, layered mud.

significant impact - A qualitative term used to describe the anticipated importance of impacts to the human environment as a result of an action.

socioeconomics - The social and economic situation that might be affected by a proposed action.

soil survey - The systematic examination, description, classification, and mapping of soils in an area, usually a county. Soil surveys are classified according to the level of detail of field examination. Order I is the most detailed and Order V is the least detailed.

spontaneous combustion - The heating and slow combustion of coal and coaly material initiated by the absorption of oxygen.

steppe - Referring to extensive plains dominated by grasses.

stipulations - Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all federal leases. Other stipulations may be applied to specific leases at the discretion of the surface management agency to protect valuable surface resources or uses existing on those leases.

surface disturbance - Any disturbance by mechanical actions that alters the soil surface.

threatened and endangered (T&E) species - These species of plants or animals classified as threatened or endangered pursuant to section 4 of the Endangered Species Act. Any species, which is in danger of extinction, or is likely to become so within the foreseeable future.

topography - Physical shape of the ground surface; the configuration of land surface including its relief, elevation, and the position of its natural and manmade features

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transpiration - The discharge of water vapor by plants.

truck & shovel - A mining method used to remove overburden and coal in a strip mining operation. Truck and shovel operations use large bucket-equipped digging and loading machines (shovels) and large dump trucks to remove overburden instead of using a dragline for overburden removal.

Trust – North Dakota's Indian Cultural Education Trust . North Dakota Century Code Chapter 15 Education Number 68. Is a State trust managed by the State Board of University and School Lands for the expressed purpose of generating income to benefit Indian culture.

unconfined aquifer - An aquifer where the water table is exposed to the atmosphere through openings in the overlying materials.

unsuitability criteria - The 20 criteria described in 43 CFR 3461, the application of which results in an assessment of federal coal lands as suitable or unsuitable for surface coal mining.

wakan – anything that is old or has existed for along time so that it should be accepted because it has been so in former

times. It may mean a strange or wonderful thing or something that cannot be comprehended. It may mean a sacred or supernatural thing.

waterfowl - A bird that frequents water, especially a swimming bird.

watershed – The region or area drained by a river, stream, etc.; drainage area.

West Mine Area – A 17,000-acre parcel west of the Coteau's Freedom Mine that is being analyzed for surface mining operations. Approximately 5, 500 acres of the West Mine Area are underlain by federal coal reserves.

wetlands - Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs [see 33 CFR 328.3(a) (7) (b)].

wild and scenic river - Rivers or sections of rivers designated by Congressional actions under the 1968 Wild and Scenic Rivers Act as wild, scenic, or recreational by an act of the Legislature of the state or states through which they flow.

wilderness - An area of undeveloped federal land designated wilderness by Congress, retaining its primeval character and influence, without permanent improvements or human habitation, protected and managed to preserve its natural conditions and that (1) generally appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable, (2) has outstanding opportunities for solitude or primitive and unconfined recreation, (3) has at least 5,000 acres or is of sufficient size to make practical its preservation and use in an unimpaired condition, and (4) also may contain features that are of ecological, geological, scientific, educational, scenic, or historical value. Congress in the Wilderness Act of 1964 identified these characteristics.

APPENDIX A
PREVIOUS MINE MITIGATION EXCAVATION

SITE #	EXCAVATION TOTALS	REFERENCES
32ME0158	47 rings and 3 cairns tested; 3 rings trench excavated	Boughton et al 1994a; Boughton & Peterson 1994; Boughton et al 1996
32ME0163	Series of grader stripping passes	Dill 1978; HASI 1981; Bergstrom & Deaver 1988
32ME0166	excavated 13 rings, 5 cairns, 5 non-feature areas; 365.5m^2	Dill 1978; Kuehn et al 1984; Deaver et al 1989
32ME0175	Excavated 14 rings, partial excavation of 7 rings; full excavation of 5 cairns; 5 block units outside of ring areas; 177m^3	Dill 1978; LaVardera 1984; Deaver & Schweigert 1988; Peterson & Brownell 1989; Spath 1991a, b; Peterson & Peterson 1995
32ME0254	8 rings trenched; 3 rings fully excav; 1 cairn fully excav; 2 cairns partial excav; 40 1m x 1m units outside feature areas; 247m^2	Dill 1978; LaVardera 1984; Spath et al 1991a; Peterson & Boughton 1997; Winzler et al 1998
32ME0797	2m x 5m excav block	Gregg et al 1985; Haury et al 1988; Larson 1992; Walker-Kuntz et al 1998; Walker-Kuntz & Boughton 1999
32ME1357	N-S x E-W trench in 3 rings	Boughton et al 1994a; Boughton & Peterson 1994; Boughton et al 1996
32ME1358	N-S X E-W trench in 1 ring	Boughton et al 1994a, 1994b; Boughton & Peterson 1994; Boughton et al 1996
32ME1364	20 1 x 1m units over cairn	Boughton et al 1994a, 1994b; Boughton & Peterson 1994; Boughton et al 1996
32ME1374	N-S x E-W trench in 1 ring; 3 1 x 1m units over cairn	Boughton et al 1994a; Boughton & Peterson 1994; Boughton et al 1996
32ME1376	N-S x E-W trench in 1 ring and assoc cairn	Boughton et al 1994a; Boughton & Peterson 1994; Boughton et al 1996
32ME1380	39 1 x 1m units in 1 ring	Boughton et al 1994a; Boughton & Peterson 1994; Boughton et al 1996
32ME1384	N-S X E-W trench in 1 ring	Boughton et al 1994a; Boughton & Peterson 1994; Boughton et al 1996
32ME1387	N-S X E-W trench in 2 rings	Boughton et al 1994a, 1994b; Boughton & Peterson 1994; Boughton et al 1996
32ME1392	N-S X E-W trench in 1 ring	Boughton et al 1994a, 1994b; Boughton & Peterson 1994; Boughton et al 1996
32ME1395	N-S X E-W trench in 1 ring	Boughton et al 1994a, 1994b; Boughton & Peterson 1994; Boughton et al 1996
32ME1402	N-S X E-W trench in 4 rings	Boughton et al 1994a, 1994b; Boughton & Peterson 1994; Boughton et al 1996
32ME1403	N-S X E-W trench in 1 ring; 96 1 x 1m units in 1 ring	Boughton et al 1994a, 1994b; Boughton & Peterson 1994; Boughton et al 1996
32ME1456	1 Partial ring excav; 43m^2	Walker-Kuntz et al 1998; Walker-Kuntz & Boughton 1999

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APPENDIX B
OWNERSHIP OF LANDS WITHIN THE WEST MINE AREA

FEDERAL MINERAL ESTATE

Description	*Acres*
T. 144 N., R. 88 W.	
Section 2	164.18
Section 4	483.83
Section 6	647.41
Section 8	360.00
T. 144 N., R. 89 W.	
Section 12	320.00
T. 145 N., R., 88 W	
Section 4	555.92
Section 10	320.00
Section 14	640.00
Section 22	640.00
Section 26	480.00
Section 28	480.00
Section 34	480.00
Total Federal	5,571.34

N0N-FEDERAL ESTATES

Private Surface	16,251
Private Minerals	10,200
State Surface	800
State Minerals	1,280
Total Acreage	17,051

APPENDIX C
PREHISTORIC CONTEXT
(FROM PETERSON 2003)

Temporal /Cultural Framework

Paleoindian Tradition

The earliest occupations in North Dakota are associated with the Paleoindian tradition; a time associated with the retreat of the glacial ice masses. This tradition is believed to have occurred from 12,000 to 7,500 years ago (SHSND-AHP 1990). Culturally, the tradition is characterized by a series of related technological complexes distinguished by the use of high quality cryptocrystalline raw materials for the production of sophisticated tool kits geared toward the exploitation of large game. Low population density and high residential mobility are other hallmarks of the Paleoindian tradition.

Paleoindian sites are extremely rare in North Dakota. In the Knife River study unit, extensive investigations have been conducted at Lake Ilo that exhibited a number of Folsom components. No intact Paleoindian components have yet been identified in the Coteau Mining Region.

Archaic Tradition

Compared to the preceding Paleoindian tradition, far more information is known about Archaic occupations in the Coteau Mining Region. The Archaic tradition occurred from 7,500 BP to roughly 2,400 BP (SHSND-AHP 1990). A general climatic warming trend, known as the Altithermal, was ushered in during this tradition. As a result of the warming trend, increased periods of drought occurred, leading to the demise of numerous animal resources utilized during the previous Paleoindian tradition. The Middle and Late Archaic witnessed alternating episodes of normal dry and wet conditions, though all were less severe than during the preceding Altithermal.

Three medium to large unnotched, parallel obliquely flaked bifaces were found below Ring 143 at the Bees Nest site (32ME175) [Peterson and Peterson 1995]. Two nearby hearth/roasting pits suggest these artifacts are associated with an occupation that occurred 5,350 years ago. The pits are interesting, not only because they are some of the oldest features in the Coteau Mining Region, but also because no other features like these have been found. They are relatively large (2 ft diameter by 1.5 ft deep) and contain fire-cracked rock and exhibit oxidation along their edges. They are somewhat reminiscent of early plant processing features found at sites in the Great Basin, though uncommon on the glaciated northern plains. A pollen analysis of the fill did not provide information regarding their purpose.

Another Early Archaic component was identified at 32ME254 by the presence of Oxbow projectile points (Winzler et al. 1998). This was the earliest dated component identified at the site and was represented by Oxbow projectile points found beneath Ring 87. Two other Oxbow points (in addition to McKean and Besant projectile points) also were recovered below Ring 79; suggesting 32ME254 was occupied multiple times. No dateable features or bone were found in association with these projectiles. Dates for the occurrence of Oxbow in North Dakota range between 5300-4500 BP; however, the North Dakota State Plan (SHSND–AHP 1990) suggests that Oxbow style projectiles may be more recent in age. To explore this possibility, the North Dakota State Plan places an emphasis upon identifying intact Oxbow deposits that can be dated later than 4500 BP (SHSND-AHP 1990:3.30)

An Oxbow-style point was identified at 32ME185 (Boughton et al. 1999) in the West Mine Area. The site is situated within a plowed field, however, a small number of artifacts were observed below the plow zone, suggesting more intact deposits might exist.

Middle Archaic

Unlike the isolated examples of early Archaic occupations, Middle Archaic occupations are relatively common. Middle Archaic components are often represented by McKean, Duncan or Hanna projectile points. Their occurrence in North Dakota date from 4500-3000 BP (SHSND-AHP 1990).

The earliest use of the tipi representing upland plains living is believed to have occurred during the middle Archaic and likely during the McKean complex (Frison 1978:51; Reeves 1970). It is, therefore, not surprising that we find McKean complex projectiles in stone ring features. Indeed, McKean components have been identified at almost all of the larger ring sites that have been investigated in the Coteau Mining Region. These include the Onion Ring site (32ME166) [Deaver et al. 1989], the Bees Nest site (32ME254) [Peterson and Peterson 1995] and site 32ME254 (Winzler et al. 1998). At the Onion Ring site, a single Duncan point was recovered from a cairn feature; little was learned about this occupation at the site other than it appears to predate all the ring occupations. Two Hanna type points were recovered from the excavations at Ring 15-West at the Bees Nest site, indi-

cating the ring was occupied during this complex. At 32ME254, two McKean points and one Duncan point were recovered from Feature 64, a McKean point was recovered from Feature 79, and a Hanna-like point was recovered from Feature 57. Testing recovered McKean complex projectiles from five sites in the West Mine Area. Three were recovered from cairns (Feature 3C at 32ME144, Feature 1C at 32ME206 and Feature 9C at 32ME1589) and two from lithic scatters (32ME1508 and 32ME1548). Both of the lithic scatters are found within plowed fields.

Late Archaic

Surprisingly, Pelican Lake projectile points are relatively rare in the Coteau Mining Region. Although they occur, they are present in very small numbers and are usually found mixed with Besant projectiles. Variation associated with different projectile point styles has traditionally been viewed as being temporally significant or diagnostic. However, a review of Besant sites in Montana and the Dakotas suggests some of the variation may be related to other factors, such as projectile recycling, especially retooling (S. Deaver 1997). Pelican Lake components representing the Late Archaic tradition in the Coteau Mining Region were identified at the Bees Nest site and site 32ME254. At the Bees Nest site, this projectile point style was identified at Ring 5. At 32ME254, a single possible Pelican Lake point came from Feature 57. Pelican Lake components are believed to date between 3500 and 1700 BP (Gregg 1985). The only Pelican Lake projectiles found within the West Mine Area are from sites 32ME185 and 32ME1548. Both sites have been repeatedly plowed and contain diagnostics other than Pelican Lake.

Plains Woodland/Late Prehistoric Tradition

The Plains Woodland tradition is characterized by the appearance of pottery in the archaeological record and burial mound construction. An increase in the specialization of upland living and the utilization of open prairie resources continued from the preceding period. Toward the end of this tradition, the bow and arrow replaced the atlatl, dart and spear as the preferred weapon, which resulted in a more efficient exploitation of game. The presence of pottery in Woodland sites has led to many debates concerning the significance of Eastern Plains influences on Northwestern Plains peoples.

Besant-Sonota

The majority of features previously examined in the Coteau Mining Region are associated with the Besant complex of the Plains Woodland tradition/Late Prehistoric period (Deaver and Brownell 1992). Previously, Besant has been reported to occur from 2000-1100 BP on the Northern Plains (Gregg 1985:118). Deaver and Deaver (1987:29) argue that the Besant complex continued for a greater period of time in North Dakota, with transitional levels containing both Pelican Lake and Besant beginning around 2,300 years ago and continuing until 800 years ago. Investigations at the Bees Nest site (Peterson and Peterson 1995) pushes the onset of Besant in the Coteau Mining Region even earlier, with four radiocarbon dates associated with Besant projectiles that have an intercept date of circa 3,000 years ago (see Table 2.1). The Besant complex also appears to last longer in central North Dakota than in many regions of the plains. This finding presents the intriguing possibility that central North Dakota may have been the home territory for Besant populations. This finding also is supported by the dominance of Knife River flint within most Besant archaeological components dating to these times (Gregg 1985).

At the Onion Ring site, four ring features and one cairn are associated with this complex. Besant projectile points were recovered from three of the rings, while a hearth dating to approximately 1950 BP and two Besant fragments were identified in the fourth (Deaver et al. 1989). Two ring features at 32ME220 yielded Besant projectile points (Deaver 1990). A number of rings, including 10-West, 14-West, 37, 52, 53, 54 and 56 at the Bees Nest site have been interpreted to be Besant occupations based on the recovery of this type of projectile point and associated radiocarbon dates (Peterson and Peterson 1995). Of the eight ring features excavated at 32ME254, seven are believed to be associated with this complex (Winzler et al. 1998).

In the West Mine Area, 32ME185 (lithic scatter), 32ME1474 (cairn feature F5C), 32ME1544 (CMS), 32ME1548 (plowed field), 32ME1562 (Feature 25R), 32ME1577 (Feature 23R) and 32ME1580 (Feature 1R) contain Besant-style projectiles. Cord marked and smoothed-over-cord-marked pottery shards that typically mark middle/late Woodland occupations were identified at 32ME232 (Feature 33C), 32ME1323 (Feature 11R), 32ME1513 (Feature 26C) and 32ME1577 (Feature 3R).

Most Besant components are identified by co-occurring Besant-style projectile points. The range of variation observed within Besant projectiles is quite wide. Although a number of archaeologists (Deaver 1997; Hughes 1987) suggest that this is the result of curative tool maintenance associated with hunting and butchering, and that the variation also could reflect subtle stylistic changes in Besant projectile technology through time. If this is true, a greater refinement of the Besant occupations and changes through time can be obtained.

The primary interest of the North Dakota State Plan for the Knife River Study Unit (SHSND-AHP 1990) is in the Sonota complex and how it may relate or be distinguished from the later Plains Village tradition. The Sonota complex is distinguished by the development of burial mound ceremonialism. Sonota sites and Besant sites are virtually indistinguish-

able, except for the presence of burial mounds (Neuman 1975). Sonota is believed to represent a more sedentary adaptation associated with a more "Woodland" lifestyle near river valleys: Besant groups generally lived in upland tipi camps and practiced a mobile, bison hunting adaptation. The presence of mound features at the Boeckel-Renner site (32ME799), in what appears to be an upland Besant stone ring site, could suggest Sonota may not have been as restricted to the river valleys as was once believed. The Boeckel-Renner site is immediately adjacent to the West Mine Area (Artz 1989). In a more generic sense, the North Dakota State Plan (SHSND-AHP 1990) is interested in whether the Woodland tradition co-existed with the Plains Village tradition.

Mortlach

One site, 32ME1578, contains Mortlach pottery. The presence of a Mortlach component in the West Mine Area is noteworthy since other Mortlach sites have not been identified in the Coteau Mining Region. Because Mortlach is not commonly found south of the Missouri River, Dr. Walde, a ceramic specialist at the University of Calgary, came to the Ethnoscience facilities to confirm their cultural affiliation. Mortlach ceramics have been attributed to the Hidatsa (Byrne 1973; Malainey 1991; Wettlaufer and Mayer-Oaks 1960) or to the Gros Ventre (Joyes 1973; Kehoe and Kehoe 1968). However, more recently a strong case has been made for an affiliation between Mortlach ceramics and the Assiniboines (Walde 1994).

Avonlea

Although the Avonlea complex is generally regarded as a western manifestation, we have some evidence of this complex in the Coteau Mining Region. Avonlea projectiles are notable because they are believed to be the first evidence for the bow and arrow in the Northern Plains. Avonlea occurrence in North Dakota is believed to range from 1,500 to 1,000 years ago (SHSND-AHP 1990). It is not generally believed to have obtained a foothold in central North Dakota. The only evidence for Avonlea in the Coteau Mining region occurs within one ring feature at the Bees Nest site (Peterson and Peterson 1995) and a cairn at 32ME1374 (Boughton and Peterson 1994).

Thirty-four point or point fragments recovered from the Northeast portion of Feature 18 represented the Avonlea projectile points at Bees Nest. This area of the ring was identified to be a re-tooling locality. In the southwest portion of the ring, evidence exists for the manufacture of projectile points. The unusual aspect of this knapping station was the presence of Besant projectiles that are believed to have been discarded during manufacture. It is suggested that the Avonlea projectile points were removed and replaced with Besant projectiles that were made within the inhabited tipi. Therefore, the presence of Avonlea projectiles at this location may actually be associated with a Besant component.

Plains Village Tradition

The most recent prehistoric occupations identified in the Coteau Mining Region tend to be associated with Plains Village occupations. The components are often identified by the presence of small side-notched projectiles points, such as Plains side-notch and Prairie side-notch points, ceramics, or earthlodge features.

The Plains Village tradition began around 1,000 years ago and continued until roughly 250 years ago (SHSND-AHP 1990). The period of time associated with the Plains Village tradition is represented at a number of sites in the Coteau Mining Region. Previously investigated sites include Cairn 4 at the Onion Ring site (Deaver et al. 1989), Features 34, 35, 134 and the later occupation identified at the Zone C block excavations at the Bees Nest site (Peterson and Peterson 1995) and Ring 10 at 32ME1403 (Boughton et al. 1996) have been identified as being occupied or used during the Plains Village tradition. In the West Mine Area, 11 sites contain possible Plains Village components. The sites include 32ME205, 32ME232 (Feature 33C), 32ME756 (Feature 16R), 32ME766, 32ME1478 (Feature 5C), 32ME1513 (Feature 1C, Feature 23R), 332ME1524 (Feature 5C), 332ME1548, 32ME1551 (Feature 6D), 32ME1561 (Feature 5R), 32ME1577 (Feature 3, Feature 23R) and 32ME1589 (Feature 9C).

In the West Mine Area, 24 sites yielded diagnostic artifacts. Of these 12 (50 percent) are attributable to Plains Village. In fact, it is the most commonly represented component in the West Mine Area. This is different than the sites examined east of the Beulah trench, which are dominated by Besant components. Why this should occur is unknown.

Equestrian Nomadic Tradition

With the onset of exploration in the Americas, Euro-American populations introduced a variety of goods that were readily adopted by the Plains tribes. The horse and the gun were of particular importance. Unfortunately, communicable diseases were also introduced. The availability of new technologies and disease is believed to have had increasingly severe impacts to the lifestyles of regional tribal populations. Ethnographic accounts suggest the new permit area was extensively exploited; however, little evidence has been found archaeologically. In part, this can be attributed to the short time span (1720-1820s) associated with this tradition.

Currently, the only site that contains evidence of tribal occupations in the region after the introduction of Euro-Americans to North America is at the Bees Nest site. Two cairns and a series of alignments that are associated with the burial

of Raven Chief during the occupation of the Like-A-Fish-hook Village represent this period. This site has been identified as a Traditional Cultural Property under Criterion B, because of its association with an important leader of the Hidatsas (Peterson and Peterson 1995).

The proximity of the new permit area to Like-A-Fishhook Village and the presence of a burial at the Bees Nest site suggest the new permit area was occupied during the Protohistoric and Historic periods. No sites associated with the Equestrian Nomadic are identified in the West Mine Area.

Multiple Components

Many of the sites investigated in the Coteau Mining Region exhibit multiple components indicative of repeated occupation. McKean, Plains Village, and Oxbow diagnostics are often found in sites that are dominated by Besant occupations. While diagnostics found in individual stone ring features often are easily separated, separating components within the same stone ring feature is more complicated. This is made especially difficult because of the shallow nature of cultural deposits present in glacial till sediments.

The occurrence of earlier diagnostic artifacts found beneath the ring wall depth has been used to identify separate components at some stone ring features (Peterson and Peterson 1995; Winzler et al. 1998); however, separating the non-diagnostic artifacts (e.g., flaking debris bone) is often problematic. In cases where diagnostics from different components at or above the base of the stone ring wall occurs, it is generally assumed that the later component is associated with the use of the stone ring (Peterson and Peterson 1995; Boughton et al. 1996; Peterson and Peterson 1995; Winzler et al. 1998). Features 1 and 2 at 32ME169, which represents a stone ring feature placed within another stone ring feature, provide an excellent opportunity to determine whether a more fine-grained excavation technique (i.e. excavation in 5 cm levels) is a method of distinguishing between successive occupations.

AMERICAN INDIAN HISTORY (FROM BOUGHTON 1999)

Direct association between prehistoric cultural complexes and known modern Indian populations remains difficult to clearly define. In large part, this shortcoming is due to the fact that investigations of prehistoric sites are largely based upon material culture, while data used to time the movements of the ancestors of modern tribal groups are based on linguistic affiliation.

The earliest sites for which a linguistic affiliation has been ascribed in North Dakota are Plains Village sites. Plains Villagers are ancestral to both the Mandan and Hidatsa (Gregg and Hanson 1983:54-55). One of the earliest sites for which linguistic affiliation has been ascribed is the Flaming Arrow site, which is located on the Missouri River 20 miles below the Knife and Menoken Village on Apple Creek, east of Bismarck (Ahler et al. 1991). Ahler and others (1991:27-30) suggest this habitation site represents an occupation by ancestral Awatixa (Hidatsa also referred to as Minnetaree) around AD 1100. It is also speculated that early Mandan populations may have also been present in the Missouri area at this time (Ahler et al. 1991:29; Glassner 1974a:72-73).

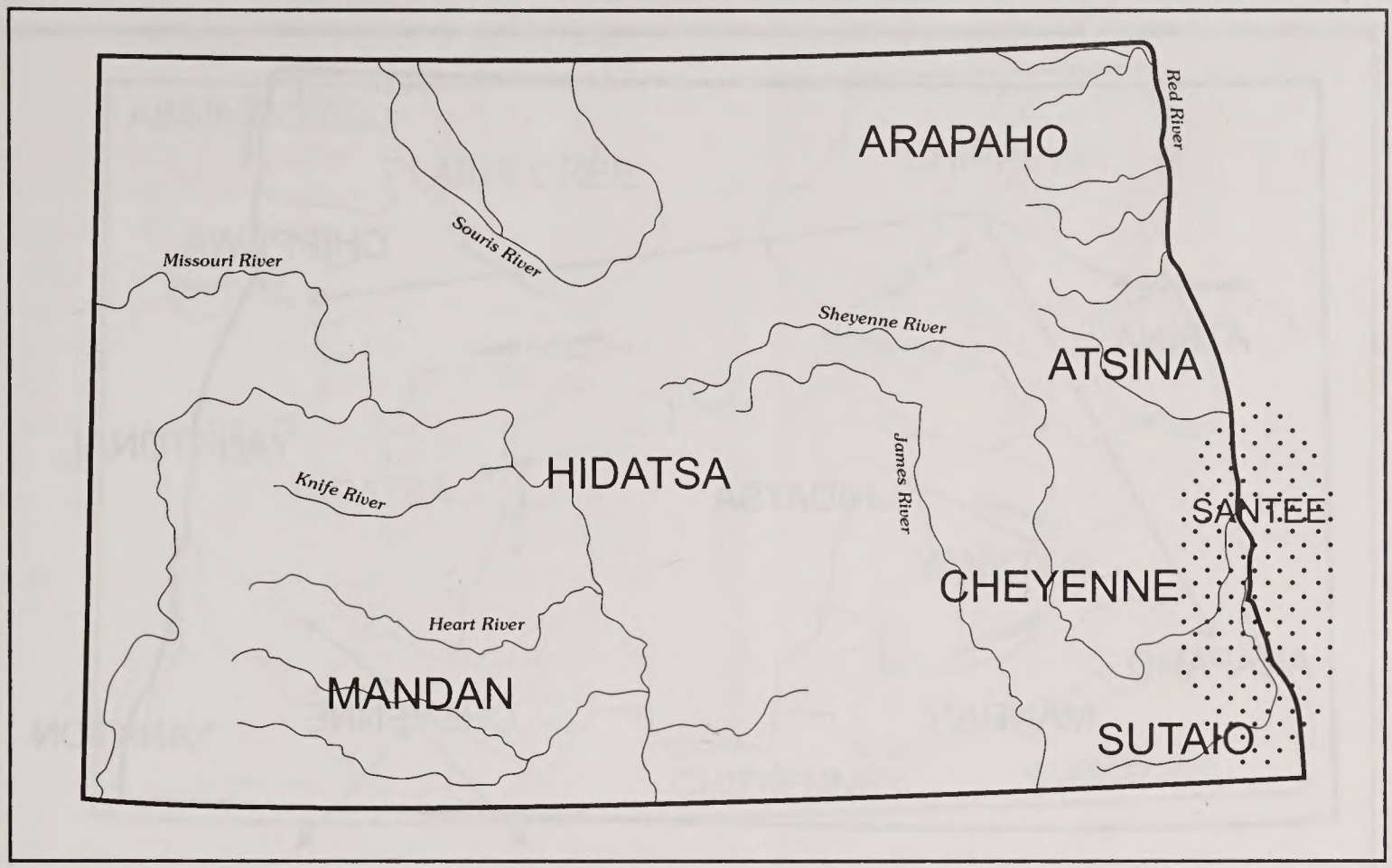
Between AD 1200 and 1450, both ancestral Awatixa and Mandan populations became firmly established in the Knife River region (Ahler et al. 1991:3 1). Around AD 1400, early Mandan began occupying the area south of Square Butte, while the ancestral Awatixa inhabited much of the Missouri up-stream of Square Butte and into eastern Montana, including the Devils Lake area. Populations of both groups are believed to have increased dramatically during this period of time (Ahler et al. 1991:38-39). By the mid 1400s, a few large villages were inhabited below the Knife River, consisting mostly of a few lodges scattered along the terraces adjacent to the river bottoms (Ahler et al. 1991:52). Between AD 1475 and 1525, the community structure began to change. Villages became reduced in number, larger, more densely packed, and eventually fortified (Ahler et al. 1991; Glassner 1974a, 1974b). Archaeological evidence suggests that between AD 1450 and 1600, ancestral Mandan and Awatixa heavily interacted with one another and exchanged many material traits (Ahler et al. 1991:45).

Meanwhile, the Red River valley of the north was occupied by the Cheyenne-Sutaio and Arapaho-Atsina, with the Cheyenne-Sutaio to the south and the Arapaho-Atsina to the north (Hewes 1961:51). Proto-Blackfoot may have also been located in Minnesota or in the Red River valley (c.f., Hewes 1961:54).

AD 1600-1700

Between AD 1600 and 1700, oral traditions, marking specific tribal movements and early written documents, provide a clearer understanding of the movement of populations within North Dakota (Figure C.1). However, increased tribal movements also characterize this period. Under pressure from the northward encroaching Arikara, the Mandan moved out of South Dakota and settled between the Cannonball River and Knife River (Hewes 1961:54). Two waves Of Hidatsa moved into the Middle Missouri region. The first was the Awaxawis, who became closely allied with the Mandan. The second wave was the Hidatsa-proper (Minnetarees) (S. Deaver 1986; Voget 19841). As a population, the Hidatsa continued to control the region during this period. Around 1670, a quarrel between No Vitals (leader of the River Crow) and other Hidatsa occurred at Devils

Figure C.1
North Dakota ca. AD 1600



Lake, which eventually lead to a split between the two groups (Voget 1984:4-9).

The Sioux, escaping hostile Chippewa and seeking the abundance of bison on the plains, began pushing westward in the late 1600s from the woodlands of Minnesota. As they moved west, they began to encroach on the territory occupied by the Cheyenne-Sutaio and Arapaho-Atsina in the Red River valley. In response, the Arapaho-Atsina began moving west.

The Assiniboine split from Yanktonai Sioux around 1640 to 1650, starting moving northwesterly and became aligned with the Cree (S. Deaver 1986:24; Hewes 1961:51). The Assiniboine traded corn received from the Mandan and other village tribes of the Missouri, for axes, knives, bullets, and gunpowder from the French and English traders (Rodnick 1938:1).

AD 1700-1780

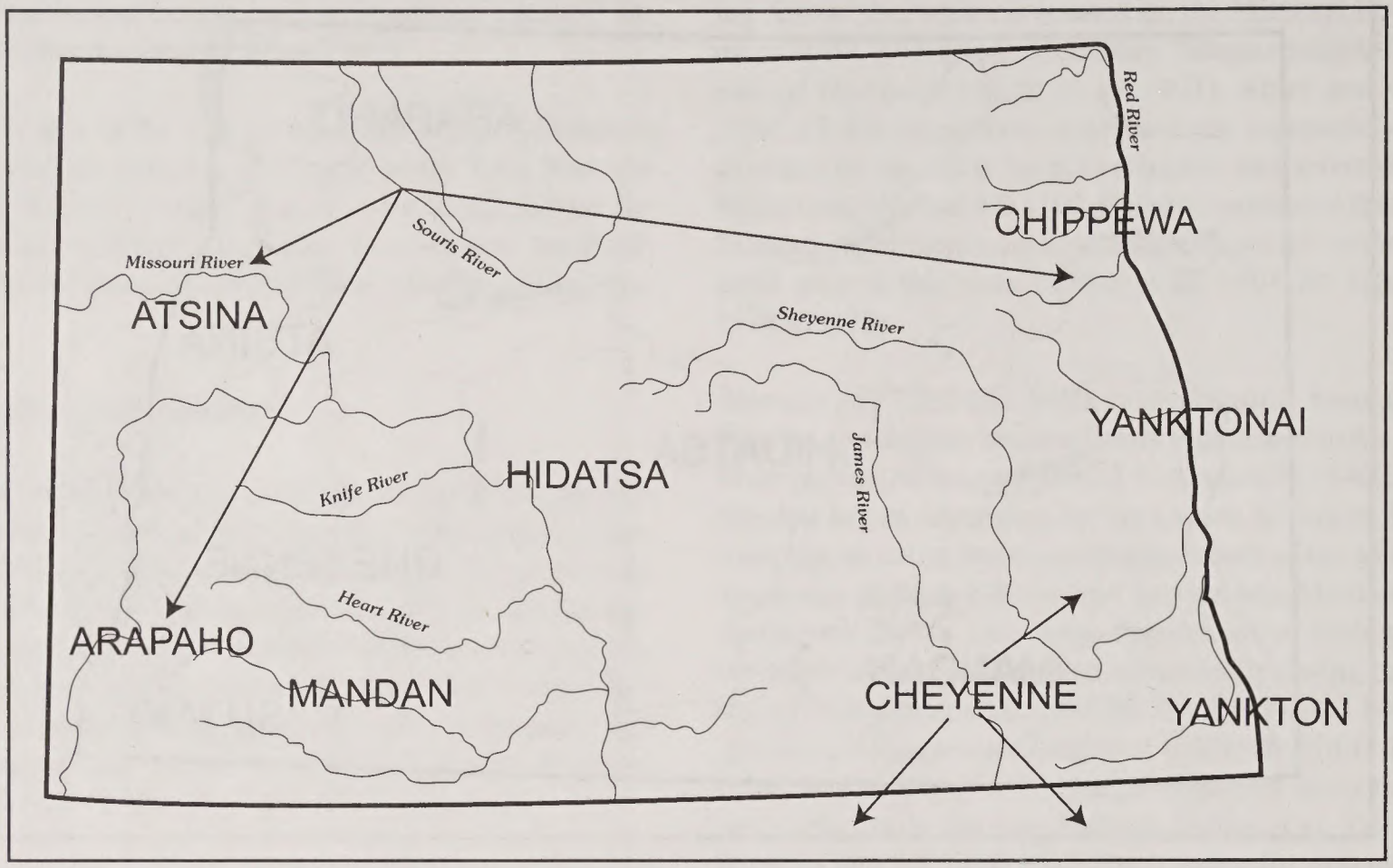
Between 1700 and 1780, an increasing number of Indian groups moved into North Dakota (Figure C.2). As contact increased, mobility increased and territories became more fluid. During this period of time, ancestral River Crow moved along the Yellowstone in Montana (Voget 1984). The Mandan and remaining Hidatsa occupied villages near the Heart River of North Dakota, but their hunting territory extended far outside the trench. The range of the Hidatsa-proper bands at this point included the Missouri, lower Yellowstone, Little Missouri and Souris rivers, as well as the Turtle Mountains and Devils Lake region (Bowers 1965:26). Hidatsa villages occurred along the northern edge of the Turtle Mountains and on Graham's Island in Devil's Lake (Gregg et al. 1983:56).

The Arapaho and Atsina expanded westward from the Devil's Lake area across the Coteau to the area around the mouth of the Little Missouri River. In the 1720s, the Arapaho and Atsina separated (Hewes 1961:52). The Atsina moved in a northwesterly direction and by 1750 became allied with the Blackfoot. The Arapaho moved in a southwesterly direction and became allied with the Cheyenne.

The Assiniboine and their allies, the Plains Cree, hunted in the valley of the Souris River in the winter and near the Turtle Mountains in the summer. Some bands of the Hidatsa-proper and some Plains Chippewa also utilized this area. The Sioux blocked all groups from crossing the Missouri Coteau.

By 1738, the Chippewa pushed across the Red River valley and began moving toward the Turtle Mountains (Gregg et al. 1983:40-41). Major divisions within the Cheyenne occurred during this time. The majority of the Cheyenne had moved south from the Red River valley; however, some went to the Sheyenne River in North Dakota.

Figure C.2
North Dakota ca AD 1700



The Yankton controlled eastern South Dakota in 1720. By 1740, Yanktonai territory centered in southern North Dakota, east of the Missouri River. Yanktonai earthlodge villages (Drifting Goose, Big Head, and Little Soldier) were settled; however, only five percent of the Yanktonai lived in the villages at any point in time (Gregg et al. 1983:41).

AD 1780-1850

This period is marked by increasing hostility between Indians. The encroachment by white populations further increased the tensions. In the late 1700s, the Mandan, Hidatsa and Arikara still held traditional territories along the Missouri in the Dakotas (Figure C.3). Smallpox swept through these populations in 1780 to 1781. The Arikara were decimated and the Mandans lost two-thirds of their population. The Hidatsa, however, fared somewhat better (Ahler et al. 1991:57). Disease and continued harassment by the Sioux forced most of the Mandan to abandon their traditional territory around the Heart River and to move north to join the Hidatsa around the Knife River.

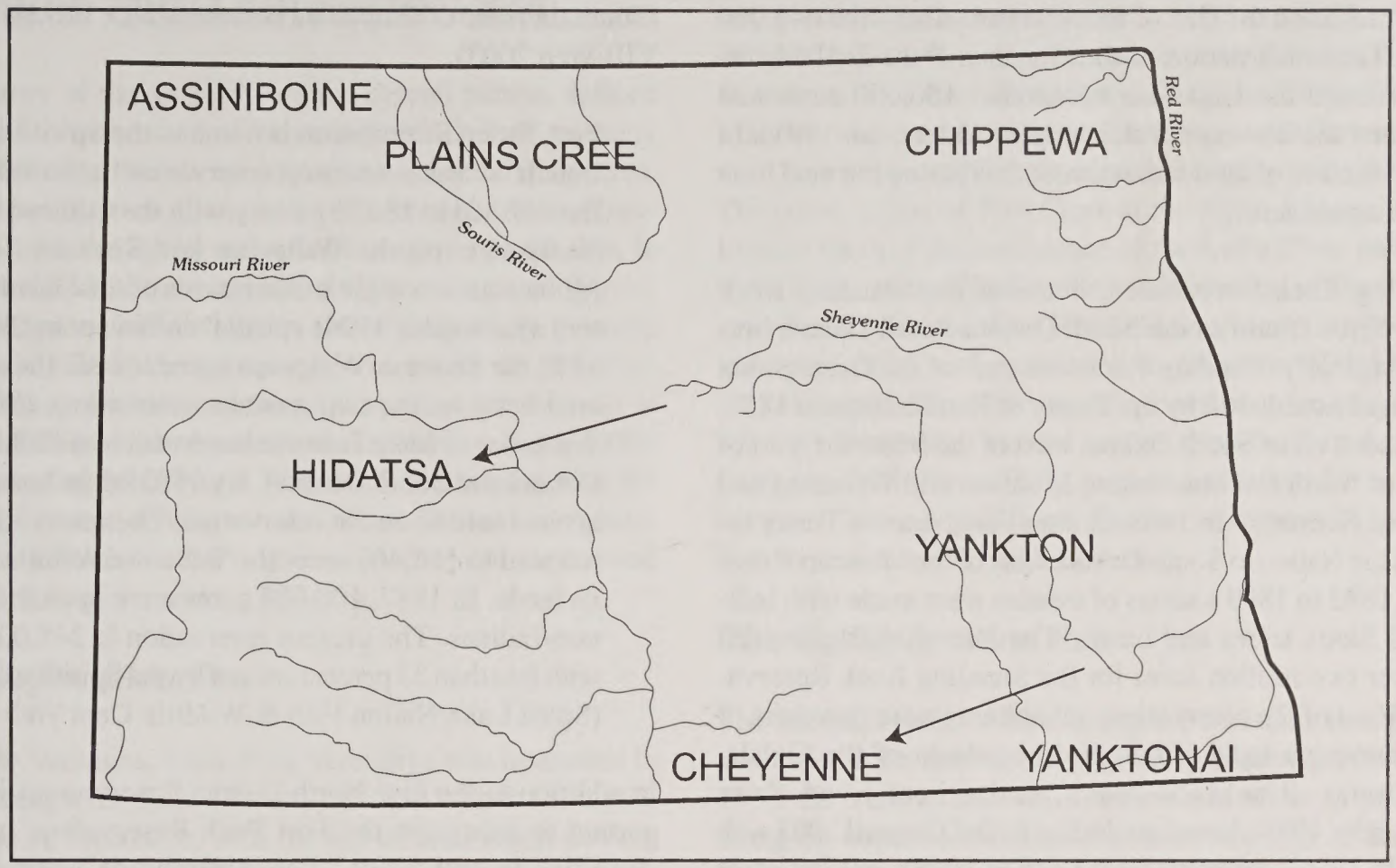
Hidatsa-Mandan villages were formed in the 1790s. The Hidatsa-proper moved into temporary camps near the Mandan in the Heart River area and then moved upstream

North of the Knife River with the agreement of the Mandan and other Hidatsa (Gregg et al. 1983:56). The Arikara abandoned their villages in South Dakota and moved upriver to join other Arikara at Greenshield (32OL17). They stayed only briefly due to conflict with Mandan and Hidatsa, and then moved back downriver and formed three villages near Mobridge, South Dakota. Consolidation of the three tribes continued through the 1800s, forced by continuing Sioux raids and population losses caused by more smallpox epidemics (e.g., 1837). In 1837 to 1838, the Arikara moved into the former Mandan village at Fort Clark (32ME2). By 1845, the Mandans and Hidatsa ceased to exist as independent tribal units. Together they formed a new settlement, Like-A-Fishhook Village. By 1862, all of the remaining Mandans and the Arikara had joined this community (Ahler et al. 1991; S. Deaver 1986).

Beisterfeldt, the Cheyenne earthlodge village on the Sheyenne River, was destroyed by invading Chippewas ca. 1790. Consequently, some groups of Cheyenne moved to the vicinity of Fort Yates. The Sutaio were absorbed into the Cheyenne. The combined Cheyenne-Sutaio then split into two groups, the Northern and Southern Cheyenne (Wood and Liberty 1980:286).

In the 1800s, the Plains-Cree and Assiniboine hunted in the valley of the Souris River in the winter and near the Turtle Mountains in the summer. However, they could not cross the Coteau as it continued to be blocked by hostile Sioux (Ewers 1974:35). The Assiniboine held the confluence of the Missouri and the Yellowstone (Hewes 1961:52). The Chippewa-Cree crossed the eastern boundary of North Da-

Figure C.3
North Dakota ca. AD 1780



kota (Ewers 1974:35) and continued moving westward, spreading to central Montana by 1850. Northern North Dakota was controlled by the Chippewa-Cree and southern North Dakota was dominated by the Yankton.

INDIAN RESERVATIONS (ORIGINAL TEXT USDI BLM)

Before 1850 lands in the West including North Dakota were set-aside as Indian Country for the Plains and removed eastern tribes. Migration and immigration of white settlers and inherent problems lead to the Treaties of Fort Laramie of 1868 and the Treaty of Medicine Lodge of 1867, which established large reservations for the tribes. The Great Sioux Nation after the Plains conflicts of the 1860-1870s was divided into smaller reservations in North and South Dakota. After 1871Congress made no more treaties with American Indians. Congress passed the General Allotment Act in 1887 providing for the allotment of lands to individual Indians. The immediate effect of the act was to again reduce the size of Indian reservations as lands were sold off. The Indian Reorganization Act of 1934 was passed to halt the sale of tribal lands, ending the allotment policy. The Act also allowed the tribes to incorporate and establish tribal constitutions and constitutional forms of government.

Forced assimilation by relocation marked the federal policy of the 1950s. The government provided financial assistance to relocate in urban areas. House Concurrent Resolution 108 was to terminate "from Federal supervision and control and from all disabilities and limitations applicable to Indians". One of the tribes was the Turtle Mountain Chippewa. Under Termination policy all the trust lands would be sold and proceeds divided among the people. No reservation and no further governmental services would be provided. At the end of the 1960s the policy of Termination was changed to the comprehensive policy of Self-Determination.

In 1975 the Indian Self-Determination and Education Assistance Act formally changed the policy of termination. The act among other changes provided that tribal governments could contract with the Bureau of Indian Affairs to administer their own programs. Today tribes constantly face lack of sufficient funds to support their programs and are faced with Federal-funding cuts.

There are four Indian reservations within North Dakota: Fort Berthold, Standing Rock, Fort Totten, and Turtle Mountain. The Sisseton Reservation, which extends into North Dakota, has its administrative center in South Dakota and is considered a South Dakota reservation (Schneider 1994).

The Fort Berthold Reservation is home to the Three Affiliated Tribes (Mandan, Hidatsa, and Arikara). The reservation is located just north of the proposed mine area and presently covers some 981,000 acres (Fort Berthold Library Web Site 2003). Originally extending west of the Missouri River

into Montana. In 1870 and 1880 Executive Orders reduced the reservation to less than 3 million acres. In 1894 allotment of the reservation began and in 1910 an agreement further reduced the size of the reservation to some 643,000 acres. The construction of the Garrison Dam in 1954 further reduced the land base by another 150,000 acres and disrupted the lifeways of the people (Ahler et al. 1991). In 1970 a section of land was returned increasing the land base to its current acres.

Standing Rock Reservation, home of the Standing Rock Sioux Tribe straddles the North Dakota-South Dakota border. Originally Standing Rock was part of the Great Sioux Nation as established by the Treaty of Fort Laramie in 1851. It included all of South Dakota west of the Missouri, part of western North Dakota, eastern Montana and Wyoming and western Nebraska. In 1868 another Fort Laramie Treaty reduced the Nation to South Dakota west of the Missouri River. From 1882 to 1889 a series of treaties were made with individual Sioux tribes and bands. The Act of 1889 provided for over two million acres for the Standing Rock Reservation. Most of the reservations inhabitants were members of the Hunkpapa band although descendants of the Oglala, Yanktonai, Blackfoot Sioux, and others lived there (Schneider 1994; American Indian Relief Council 2003 web site). In 1906 allotments began and in 1908 a million acres in the western part of the reservation were opened to white settlers. In 1948 the reservation contained over one million acres of land. The Oahe Reservoir took 50,000 acres of bottomland. In 1973 the reservation holdings had shrunk to 844,000 acres.

Turtle Mountain Reservation is home of the Turtle Mountain Band of Chippewa. Located just below the Canadian border, the reservation was the last to be established in North Dakota. The establishment of the Dakota Territory recognized the claims of Chippewa and Metis to 10 million acres in northeastern North Dakota. The Metis are recognized as a distinct ethnic group and their affiliation with the Chippewa has permitted them to be classified as Indians. Although the government originally agreed to this claim, in 1882 the land was opened to settlement. Also in 1882 an Executive Order set aside a tract of land of 72,000 acres for the use of the Turtle Mountain Chippewa. In 1884 the land base was reduced to two townships. The sum of 1 million dollars was paid for reparations of lands opened to settlement (Gourneau 1993). About this time Metis from Canada fled from the Riel Rebellion and those who could establish claim to tribal ancestry would be able to settle on the reservation. The reservation was too small to contain all that wanted to settle. Many had to settle far from the reservation. In 1906 part of the Spirit Lake Sioux Reservation was allotted to the Turtle Mountain people. Today the reservation consists of two townships, approximately 34,000 acres (Schneider 1994). The Tribe and its members also hold 6,700 acres in trust at Trenton, Montana; 72,000 acres on and adjacent to the reservation and other individual allotments (North Dakota Office of Indian Education The History & Culture of the Turtle Mountain Band of Chippewa Bismarck ND; FEMA Region VIII Web 2003):

> Fort Totten Reservation is home to the Spirit Lake Nation. It is the eastern most reservation in North Dakota. Established in 1867 by treaty with the Cuthead band of Yanktonai and the Wahpeton and Sisseton Sioux of Minnesota was eight million acres of the Dakota Territory (Schneider 1994; spiritlakenation.com 2003). In 1872 the Sisseton-Wahpeton agree to cede the claimed land between the two modern reservations (Sisseton-Wahpeton or Lake Traverse Reservation straddles North Dakota and South Dakota). By 1883 white homesteaders had settled on the reservation. The reservation was reduced to 166,400 acres the Tribe was reimbursed for its lands. In 1887, 100,000 acres were open for sale to non-Indians. The present reservation is 245,000 acres with less than 33 percent owned by the Spirit Lake Sioux (Spirit Lake Nation Fish & Wildlife Dept Web 2003).

In addition to the four North Dakota Reservations it is important to recognize the Fort Peck Reservation, home to Assiniboine and Sioux. The Assiniboine were veteran middlemen in the fur trades. The French Canadian explorer, La Verendreye, accompanied a regular annual trade expedition by eastern Assiniboines to the Mandan villages in 1731-38 (Institute of American Indian Studies 1997 University of South Dakota Web). The Yantonais (Sioux) have claims to be original inhabitants of North Dakota (Schneider 1994).

The Fort Peck Reservation is home to two separate Indian nations, each composed of numerous bands and divisions. The Sioux divisions of Sisseton/Wahpetons, the Yantonais, and the Teton Hunkpapa are all represented. The Assiniboine bands of Canoe Paddler and Red Bottom are also represented (Montana-Wyoming Tribal Leaders Council, 2003). Today's reservation is located in the extreme northeast corner of Montana, on the north side of the Missouri River and covers over 2 million acres (Indian Health Service 2003). In 1851 at Fort Laramie the Assiniboine claimed land south of the Missouri River (south of the present day reservation). The Great Sioux Nation territory comprised most of the Dakota Territory. In 1868 another treaty created a reduced territory for the Sioux Nation. By 1883 the Assiniboine Tribe lost the territory of the 1851 Fort Laramie Treaty to white settlers. In 1886 Congress authorized the Commissioner of Indian Affairs to begin negotiations with the Tribes. It was at this time that the present reservation was negotiated. In 1888 the Congress of the United States ratified the agreement, concluding three years of negotiations (Indian Health Service, 2003).

EURO-AMERICAN HISTORY (1850 ONWARD)
(DERIVED FROM BOUGHTON 2000)

The history of the area follows the overall pattern defined for the historical record of western North Dakota, as many of the defining themes are represented in the study area. Five overall themes characterize this area; 1) the exploration era with the initial arrival of Europeans in the area in the 1700s; 2) the expansion era with the ever-growing presence of trappers, buffalo hunters and military troops between 1800 and 1850; 3) the transportation era with the introduction of the steamboat and the expansion of the railroad in the mid-1800s, 4) the homestead era, starting in the 1880s and expanding after World War I and characterized by the arrival of a large contingent of German-Russian emigrants and finally 5) the coal mining era with the introduction and development of the mining industry.

The Exploration Era

Pierre de Varennes, Sieur de la Verendrye was interested in establishing a fur trade monopoly for the French Crown. In 1731, de la Verendrye, with the aid of the French Crown, made a first unsuccessful attempt to travel westward across the Missouri. His second attempt in 1738 led him to Mandan country along the Missouri River.

The next fifty years would see few Europeans travel through the area. A small number were trappers attempting to establish fur-trading routes through Indian country. The introduction of a fur trade economy would lead to an ever increasing economic dependency on European goods and redefine trading networks between the various Native groups that had existed prior to the arrival of Euro-Americans. In 1793, the Missouri Fur Company was formed and a trading post was built near Fort Randall, South Dakota.

Lewis and Clark's famed expedition throughout the heartland of the continent constitutes the most noticeable presence of Euro-Americans in the general area at the beginning of the nineteenth century. Departing from St. Louis, the expedition made its way to the Missouri River in the fall of 1804, through Mandan country. The exploration party then continued on following the northwestern route of the Missouri River probably passing north of Mercer County on what is now Lake Sakakawea in the spring of 1805.

The Expansion Era

With the increasing number of trappers in the area, the presence of Europeans was felt by the local Native groups, which were weary of the increase in number of strangers in their territory. The trappers were relatively friendly and were eager to exchange goods, but mistrust on both sides was apparent. Also, the frequent encounters between the growing number of Europeans and the local occupants combined with the migration of settlers from the east, led to a stronger military presence in the area. Between 1805 and 1860, trading companies built a number of trading posts that would serve as outposts for the US military along the Missouri. Fort Mandan, an original outpost of the Lewis and Clark expedition, served to establish territorial authority over the area. The construction of Fort Clark at the Knife River villages, located south of the confluence of the Knife River and Missouri River, was related to the establishment of fur trading activities in the area. Fort Berthold was established to provide protection and assistance to Mandan, Hidatsa and Arikara populations that were displaced because of epidemics. Fort Stevenson, located on the north bank of the Missouri was built for military purposes to control hostilities between Native populations. The fort also served as protection for travelers and mail carriers.

The Transportation Era

The establishment of forts along the Missouri brought an additional economic boom in the way of transportation. In 1832, the Yellowstone was the first steamboat to navigate along the upper Missouri and to reach Fort Union. Built by the American Fur Company, the Yellowstone was used to transport goods in and out of the region. An increasing number of other steamboats would be seen in the years thereafter along the Missouri. As they required fuel, wood yards were established along the river. The advent of these wood yards led to the initial occupation of the area by Euro-American settlers who were mainly employed as wood yard operators.

In 1864, the United States Congress granted lands to aid in the construction of a railroad from Lake Superior to Puget Sound. Congress chartered the Northern Pacific and provided a fifty million acre land grant for its construction. While an economic failure, the railroad itself allowed settlers into the region to acquire much desired land and eventually contributed to the influx of emigrants to the area. The distribution of promotional materials in German eventually found their way to German colonies in Russia.

The Homestead Era

The passing of the Homestead Act by the US Congress in 1862, which allocated 160 acres of public land to settlers prepared to farm for a minimum period of five years, served in enticing would-be farmers to cultivate the grasslands. Homestead Patents were the major land patenting process, second only to the Railroad Patents.

This period would see one of the most important movements of population in the state's history with the immigration of German-Russians into the area. Mercer County lies in an

area identified as North Dakota's "German-Russian Triangle." This region of extensive German-Russian settlement is located in the south-central and north central portions of the state. The triangle is a "truly unique ethnic enclave" for it is the largest concentration of German-Russians in the country, if not the world (Kloberdanz 1988:137).

Prior to the arrival of the German-Russians, the initial settlement of the county was slow and most settlers were from the eastern United States, although a small number came from Sweden, Norway, and Germany. The population of Mercer County was less than 300 the year before the arrival of the first German-Russian settlers. The German-Russian movement into Mercer County began in 1886, when a train of 30 wagons left South Dakota and ferried across the Missouri at Bismarck, stopping in Hebron to collect buffalo bones to replenish their supplies.

Over the next three decades, thousands of Germans from Russia came to North Dakota and many made their homes in Mercer County. In the 1900 census, the foreign-born element in the county made up 47 percent of the population. The German-Russians accounted for approximately 48 percent of this total ethnic population, which also included Germans, Norwegians and Swedes. The trend continued and the number of German-Russians far exceeded any other ethnic group (US Department of Commerce n.d.). Indeed, by 1920 it was estimated that up to 68,000 German-Russians were living in North Dakota and that 52 percent of the population living in Mercer County was of German-Russian origin (Sallet 1974).

By 1916, all the lands in the study area had been settled. The transfer of railroad lands to individual settlers appears to have been completed by the same time. Beginning in 1916, North Dakota had a poor wheat crop for three consecutive years and the western two-thirds of the state had below average precipitation from 1917 to 1920. Life on the Plains was particularly harsh and in the 1920s, many farmers lost their lands and abandoned the area because of difficult and austere living conditions. German-Russian immigrants, however, persevered. The majority held their land and maintained their distinct ethnic heritage into the 1940s (HASI 1983; Robinson 1966).

The Mining Era

The strong agricultural emphasis on the local economy of Mercer County was paralleled with the exploitation of the large deposits of lignite found in the subsurface deposits of the county. The first recorded use of coal in North Dakota is attributed to the Lewis and Clark Expedition when the blacksmith of the expedition operated his forge with lignite during the winter stay at Fort Mandan in 1804-1805. As the expedition continued up the Missouri River the following spring, coal was observed along the bluffs.

Beginning in the 1830s, steamboats on the Missouri River attempted to use coal as fuel but most attempts failed (State Historical Society of North Dakota-Archaeology and Historic Preservation n.d.). Coal was not used successfully until the 1870s when Fort Stevenson on the Missouri obtained stoves able to burn coal (Oihus 1978).

South of the Missouri and away from rivers or creeks, wood was limited and the primary source of fuel was lignite coal, which underlay most of the region. Created as a county in 1883, Mercer County had a population of 254 in 1885 (US Department of Commerce n.d.). The majority were farmers and during settlement ". . . fuel was a greater problem than food. . ." (Robinson 1966:160). Two types of coal mines, farmer mines and wagon mines, were common in the early settlement years of this lignite rich area.

Farmer mines generally consisted of an individual farmer collecting coal by hand or horse on his land for his own use or sharing it with his neighbors. Wagon mines were expanded commercial farmer mines and were usually stripping operations, using horse-drawn pull plows and scrapers. The owner of a wagon mine would provide coal for his neighbors or haul the coal into the nearest town to sell it commercially (Dahlberg et al. 1984; Oihus 1978). No farmer or wagon mines were identified within the inventoried area, but they probably existed during early settlement in the late 1880s (Spath et al. 1991a).

The earliest known commercial coal mine in Mercer County was developed in 1884 near the present-day town of Hazen, when local residents extracted exposed lignite from the bluffs located along the Missouri (Oihus 1978). In the first decade of the twentieth century, underground mines became the principal method of extraction for both larger-scale mines and the smaller commercial operations, with mechanized equipment for underground extraction increasing production.

In 1907, George Schmidt opened an underground mine north of the town of Beulah. (Oihus 1978). The Schmidt coal mine was the largest and best equipped mine in the county for around 10 years. In 1915, Schmidt opened another mine, called the Standard Coal Mine, which was successful for only two years when it flooded (HASI 1983).

Coal mining activity increased in Mercer County, stimulated by the arrival of the Northern Pacific Railway in 1914. The introduction of mechanical equipment for strip mining methods in 1917 revolutionized the technology of coal extraction. Earth-moving equipment such as the steam shovel, allowed for larger-scale, less labor-intensive operations. During the 1920s and 1930s, coal production increased. Both non-mechanized and mechanized underground and strip mines remained viable methods, although strip mining predominated. Mining continued through the depression years

but with reduced production (Dahlberg et al. 1984; Oihus 1978).

By 1920, five commercial coal mines had commenced operations in the Beulah region including Schmidt mines, the Kesler Coal Mine, and the Dilger Coal Mine. The most important coal mining development was the Beulah Coal and Mining Company. By 1920 this underground mine, now called the Beulah Coal Company, was producing over 76,000 tons of lignite. Reorganized in 1922 as the Knife River Coal Mining Company, the operation developed into the largest, most technologically advanced underground mine in the United States. The mine was eventually sold to the United Public Service Company of Chicago in 1928, and then became part of the Montana-Dakota Utilities Company of Bismarck. This mine was abandoned in 1953 (Dahlberg et al. 1984; Oihus 1978).

The 1920s also saw continuing development of commercial strip mining in Mercer County. The most notable strip mine operation was the Zap Colliery Mine that operated from 1922 to 1950. The Zap Mine used mechanized equipment and established a mining camp. The Zap Mine was the largest strip operation in western North Dakota by 1929 (Oihus 1978). Other mines in the immediate area included the Kamins Coal Company Mine, the Lucky Stripe Mine, and a number of wagon mines operated by local farmers.

In the 1930s, many farmers reacted to the severity of the economic depression by mining their own coal (Robinson 1966). Beginning in 1940, the number of active mines began to decline, marking a turning point in the history of the coal industry. Consumption of natural gas and fuel oil surpassed coal for domestic use. Small commercial mines could not compete and government regulations made operations impossible. In the 1940s, the transformation of coal utilization into electric power production began. By 1948, most coal mined in North Dakota was being used as fuel for generating electricity (Oihus 1978; Dahlberg et al. 1984).

The Dakota Star Mine in Mercer County was a Truax-Traer company operation. The Truax-Traer Company, one of the major strip mining companies in North Dakota, began to develop this large, mechanized strip mine in 1944-1945. Between 1947 and 1951, the mine was the state's leading producer of lignite. It served both a local, domestic market as well as several small power plants in the region (Spath et al. 1991b). A company-owned camp was established immediately south of the mine headquarters at the Dakota Star Mine.

The Zap Colliery Mine in Mercer County operated from 1922 to 1950 with a well-established mining camp. The Dakota Star mining camp of Truax (32ME1230) was similar to the Zap mining camp. The mining camp at Truax-Traer's Dakota Star Mine was occupied until the mine closed in 1965.

The Coteau Properties Company, a subsidiary of the North American Coal Corporation, is currently engaged in the mining of coal used by electric utilities for power generation and by a coal gasification facility. Coteau's Freedom Mine in Beulah, North Dakota, began mining in 1983. Freedom Mine delivers over 16 million tons of coal per year, making it the largest lignite mine in the United States in deliveries. The operation utilizes two Bucyrus-Erie 2570 draglines for overburden removal of about 600 to 900 acres a year. That production supplies fuel to power plants providing electricity to more than 2 million homes and businesses in the Upper Midwest. It also feeds the Great Plains Synfuels Plant that converts lignite into synthetic natural gas and valuable byproducts.

In the 1970s, a consortium of energy companies obtained federally guaranteed loans to finance the construction of the Great Plains Synfuels Plant. Operations began in 1984. The consortium abandoned the plant in 1985, and DOE assumed ownership in 1986. In 1988, DOE sold the plant to Dakota Gasification Company, a wholly owned subsidiary of Basin Electric Power Cooperative.

Operations at the facility produce a synthetic natural gas from lignite coal. The coal gasification process involves the breaking down of the molecular structure of coal to produce carbon monoxide and hydrogen that are in turn combined to produce methane.

The facility is co-located with the Antelope Valley Station, a coal-fired steam electric generating plant also owned and operated by Basin Electric Power Cooperative and the Freedom Mine, operated by Coteau Properties Company.

Since coal removal began at the Freedom Mine in 1983, Coteau's miners and equipment have produced more than 200 million tons of lignite. Each year about 600 to 900 acres are disturbed for mining and an equal amount is reclaimed. Most of the soil that is stripped ahead of mining is directly spread on graded spoils immediately behind active pits.

APPENDIX D
ARCHEOLOGICAL FEATURES
(FROM PETERSON 2003)

Sites identified in the Coteau Mining Region contain stone rings, cairns, alignments, effigies, rock art, depressions, burials, and historic features such as the Ricker farmstead.

Stone Rings

The most common site type is reflected by the presence of stone rings. This property type includes all sites that exhibit stone rings or stone ring remnants (arcs). Although other features (cairns, stone alignments) also may be present, stone rings are the defining feature of these sites. Kehoe (1958, 1960 and 1961) argues convincingly that stone rings delineate discrete habitation areas associated with the use of tipis. Of the sites examined by Coteau, stone ring features are the most evident and most examined. As a result, more is known about this site type than any other.

To date, stone rings at a rate of 1 per 30 acres surveyed have been identified within the Coteau Mining Region. Within the WMA 1,285 stone rings have been recorded. The stone ring sites investigated by Coteau average eight rings per site, but this is affected by the presence of large sites that contain over 40 rings (Figure 2.2). Therefore, the median of four rings is likely to be a more accurate reflection of average site size. This is comparable to the information gathered for 20 counties in Montana (Boughton 1999). Sites that contain over 41 rings are statistical outliers and cannot be explained by random chance. This suggests that some factor (e.g., environmental, ideological) led to either very large concentrations of people or the tendency to repeatedly return to the same general location.

The cultural representatives who participated in an examination of sites in the West Mine Area generally disagree with the archaeological interpretation that stone rings usually represent the remains of a habitation structure (i.e., tipi). It has been suggested by a member of the Standing Rock Sioux Tribe that most of the stone ring features are likely fasting beds. The rings provide a conduit between the individual in prayer and the spirits above. A tribal representative indicated that all stone features are *wakan* and must be protected.

A member of the Three Affiliated Tribes indicated that women chose the location of camps. It was noted that stone circles of approximately the same size may be tipi rings, and all rings with an opening toward the east are tipi rings. Those rings that are made from rocks of differing size are talking circles. Women determined where councils would be held and placed stones to mark the location where specific speakers should sit. A double circle marked a location where younger women were allowed to participate.

Cairns

Cairns represent the second most common type of feature observed in the Coteau Mining Region. Unfortunately, less is known about this feature type than about other stone features in the Plains. Occasionally, cairns are identified as caches or trash piles. Cairns larger than three meters in diameter, or that have high vertical profiles, represent a considerable amount of expended energy and may have played important roles, such as serving as burial markers and trailside offering piles. For this reason, larger cairns are often investigated more thoroughly than are smaller cairns.

One hundred and eighty-seven sites in the Coteau Mining Region have cairns. Four hundred and five cairns have been recorded in the WMA. Some of these sites also contain rings and are labeled as ring sites. Others contain only cairns or are associated with stone features other than stone rings (e.g., alignments) and/or lithic debris and are identified as cairn sites. Excluding those sites that did not specify the number of cairns, 683 cairns have been identified in the Coteau Mining Region.

The accretional construction of cairns over time has been observed at a number of sites in the Northern Plains. They include Bad Pass Trail, the Rosebud Battlefield, the O'Connelly cairn, Arrow Rock and the burial at Bees Nest (Loendorf and Brownell 1980; Medicine Crow 1992; Peterson and Peterson 1995). These features are associated with trail markers (Bad Pass Trail), event markers (Rosebud Battlefield), spiritual markers (Arrow Rock) and burials (Bees Nest). A number of the cairns examined in the West Mine Area yielded diagnostics that can be attributed to more than one cultural period. These include Feature 3C at 32ME144 (McKean and Plains Village), Feature 33C at 32ME232 and Feature 9C at 32ME1589. These features also contain a number of unpatinated and heavily patinated Knife River flint flakes.

Alignments

Alignments are the next most common stone feature type in the Northern Plains. They represent meandering lines of rock

that cross the prairie, often point to features or terminate at steep drainage edges.

In the Coteau Mining Region, the alignments tend to be found in very homogeneous topographic settings with no abrupt breaks. In a number of cases, these alignments are directly located in proximity to stone rings, which would suggest that their use is related to habitation camps.

Two types of alignments were observed in the new permit areas. The first type consists of a linear arrangement of rocks that can range from 3 m to 150+ m in length. Individual rocks placed in a linear manner with no observable clusters represent this feature type. This type of alignment was identified at sites 32ME230, 32ME248, 32ME1513 and 32ME1589.

The second type of rock alignment is the most common in the Plains. Sets or groups of very small "cairns" or markers that form a line represent it. This type of alignment was observed at sites 32ME170, 32ME1294, 32ME1519, 32ME1520, 32ME1553, 32ME1560 and 32ME1568. In the new permit area, the markers are composed of 3 to 25 rocks. The overall length for this type of alignment ranges between 15 and 180 meters.

Rock alignments are often identified as drivelines; however, other interpretations, such as topographic markers (Frison 1991), prayer lines and medicine wheel remnants, have also been given (Peterson and Peterson 1995). Subsurface investigations are usually unproductive (K. Deaver 1983b:2-13), and the surface manifestation of these features often provides the only clue to their function. It is normally more productive to follow alignments and determine what other features (such as large burial cairns) or cultural materials (such as a bison bone bed) are associated than to excavate the alignment.

"Alignments, linear arrangements of cairns or single stones have traditional cultural value when they are prayer lines, demarcate the direction of a prominent individual's war or ceremonial deeds or point to ceremonial structures such as medicine wheels" (Deaver and Fandrich 1999:2-5). Additionally, stone alignments may have been built as part of subsistence activities, used as drivelines by hunters to gauge how they wanted to move herd animals into traps. Other alignments may mark spirit trails or pilgrimage trails to sacred landforms.

During the inventory of the WMA, ten sites were identified as containing 21 rock/stone alignments. These include 32ME170, 32ME230, 32ME248, 32ME1294, 32ME1513, 32ME1519, 32ME1520, 32ME1560, 32ME1568, and 32ME1589. The cultural resource representatives did not comment on the alignments identified within the West Mine Area.

Effigies

Stone effigies are arrangements of stones intended to portray specific figures or symbols. Zoomorphic effigies (Davis 1975:32; Hoffman 1953:12) and anthropormorphic representations (Deaver and Deaver 1984:16-21) have been reported at a number of locations.

In the Coteau Mining Region, only a few of these features have been documented. A possible petroform was identified at 32ME254 (Spath and Christensen 1991). However, subsequent investigation (Winzler et al. 1998) indicates it was naturally formed. An identified petroform was recorded at 32ME1486 within the West Mine Area. It is composed of a central cairn containing 46 rocks and measuring 2 m x 2.5 m with a trail of rocks extending over a distance of 17 meters.

Site 32ME1486, commonly called "the turtle effigy" was determined eligible for listing on the National Register of Historic Places as a Traditional Cultural Property. The site contains an effigy figure that has documented uses for traditional cultural purposes for a minimum of three generations and is actively used today (Deaver 2001).

The Crow and the Three Affiliated Tribes (Mandan, Hidatsa, Arikara) regard monumental stone structures, such as effigies and medicine wheels, as having sacred attributes. The Sioux and Assiniboines consider them *wakan*. Commonly, they have mythological associations with supernatural figures that make them appropriate places for fasting, prayer and making offerings. Cairns associated with these features commonly represent offerings.

Effigies mark locations that have always been, and continue to be, appropriate places for fasting, prayer and making offerings. The patterns made by the stones are recognized as representations of the spiritual qualities of the area. For generations people have visited these effigies and conducted ceremonies. They continue to use these places today when access is allowed.

Rock Art

Rock art consists of symbols or figures that have been painted or pecked into stone. Pictographs are rock paintings that use natural pigments, while petroglyphs use etching, incising and pecking to depict anthropomorphic and zoomorphic figures. Various designs and representations are found in rock art, depending on the intended meaning being expressed by the artist. Interpretations concerning the significance of these features have been numerous and varied. The most common is the belief that the figures were created to evoke power.

One petroglyph (32ME113) is identified in the West Mine Area. In 1974, the petroglyph exhibited a grooved profile

of a hand and four parallel striations (Woolworth Research Associates 1974). By 1984 (LaVardera 1984), the hand was removed by collectors and today only the four striations remain.

For most Plains Indians, rock art sites (petroglyphs and pictographs) are almost always sacred. The art is either the product of spiritual beings, shaman or medicine people in a trance state, or they depict sacred or spiritual events or themes. From a generalized tribal perspective, all rock art sites deserve respect. Preserving the sites from disturbance by human agents shows respect. However, disturbance does not necessarily include the modern use and modification of these sites by tribal medicine people. Petroglyph and pictograph panels may be modified under very strict ceremonial conditions, usually at the direction of a spirit helper.

Depressions

Depressions vary in form and in size and appear to have involved different excavation methods. Nine were recorded within the WMA. Some of these features are simply defined by shallow depressions in an otherwise seamless landscape; others are more complex with rocks lining their walls and in some cases defining their outline. The smaller features are circular and are less than two meters in diameter. Larger ones have irregular elliptical to rectangular shapes and measure between five and seven feet by 10 to 15 feet. The depressions are generally shallow, varying in overall depth from one-half to 1.5 feet.

The precise use of these depression features is unknown. Nor is it known if the features are prehistoric or historic in age. If they are prehistoric, they may represent quarrying activities for clay or lithic raw materials. They may also represent eagle-trapping pits or hunting blinds. If they are historic, they may represent prospect pits used to identify the depth and thickness of gravels or coal. In some cases, these features might be natural deformities in the landscape, caused by a number of interacting natural agents.

If the function and temporal affiliation of these features can be ascertained, and if they are associated with artifacts that can be analyzed, depressions may have the potential to address pertinent archaeological research questions. One depression at 32ME1551 yielded a Plains side-notched projectile and is therefore argued to be associated with a Plains Village component.

Burials

Traditionalists do not regard burials as archaeological sites or historic properties. They see them as the final resting places of people, and as such, they should be treated with respect. Burial types commonly found in central North Dakota include cairn, mound and historic box burials. Burial cairns are generally large (10+ ft) and tend to be located on the highest points in the area. Conical mounds commonly contain more than one burial. Historic grave types included subsurface interment of individuals with or without caskets. Sometimes caskets were put in crevices and sometimes left out on the surface (Lippincott 1987).

"Burial sites are sometimes used as vision quest localities and may on occasion contain sacred objects such as medicine bundles" (Deaver 1986:117). Offerings, such as prayer stones, beads, and tobacco, may also be left at burials. Not all burials, however, have physical markers, and therefore, some may be difficult to identify.

Human remains do not need to be present for a location to be a final resting place. Cairns are sometimes made to ensure that a person returns. If that individual should die while away from his homeland, the cairn will ensure that the spirit will return to its home. Those markers without human remains are no less sacred than those that are associated with human remains.

Site 32ME108 within the West Mine Area contains human remains. None of the cultural representatives feel that it is appropriate to remove human remains. Every attempt should be made to protect them. Human remains should be removed only when no other alternative is possible, and they must be placed in a safe place. The new location must be protected from any future intrusion.

Historic Barn

Within the Ricker farmstead (32ME189) is a barn that embodies a German-Russian construction style that used native stone. German-Russian immigrants that homesteaded central North Dakota during the early 1900s brought this style. Few buildings utilizing this style of construction are extant in the region. As such, it reflects a rare example of the German-Russian vernacular construction techniques.

Avoiding this building is not a feasible option, and it is unlikely the building would survive transport. To mitigate the impact of mining, Historic American Building Survey documentation would be conducted. This documentation would include a scaled drawing and archival photography of the building. In addition, archival documents would be examined and local residents interviewed to explore the use of German-Russian vernacular construction techniques.

APPENDIX E
AMERICAN INDIAN TRADITIONAL CULTURAL VALUES
(FROM DEAVER 2001)

Historical Context

The project area lies within the historic range of the Hidatsa as defined by 1) Hidatsa oral histories and sacred texts; 2) the Fort Laramie Treaty of 1851; and 3) current scientific reconstructions of Hidatsa prehistory and history (see Bowers 1948; Wood 1967; Winham and Lueck 1994; Toom 1988). The historic Hidatsa once consisted of three distinct groups. Two groups, the Hidatsa-proper (People of the Willows) and the Awaxawi (Village on the Hill), moved into the Missouri valley relatively late (circa 1500 AD). The third group, the Awatixa (Village of Scattered Lodges) traces their origin to the Missouri River near the mouth of the Knife River (Ahler et al. 1991:28). The ancestors of the Three Affiliated Tribes have been in the project area longer than any other tribal group (Winham and Lueek 1994). The Hidatsa-proper were called the Minnetaree (People Who Crossed the River) by the Mandan during this historic period and are ancestral to the River Crow. In some historic sources, the Awaxawi are also sometimes referred to as Minnetaree, as well as Amahami and Saultier. The term Gros Ventre is sometimes used to refer to all three groups or just to the Hidatsa-proper (Deaver 1986; Schneider 1986).

Today, the Hidatsa are one of three tribes, along with the Mandan and Arikara, who make up the Affiliated Tribes of Fort Berthold. Although the Affiliated Tribes maintain separate ethnic identities and communities on the reservation, they share many cultural patterns that serve as a basis for all three groups' interest in the project area. In addition, the Crow maintain an active interest in the project area due to their historic and spiritual ties to the Hidatsa. They continued to make pilgrimages from their reservation in Montana to sacred sites (e.g., 32ME59, Grandmother's Lodge) near the project area as late as the 1950s (Deaver 1986:83-103). The Hidatsa and Crow continue to regard each other as relatives. Generally, as a matter of courtesy and respect, the Crow usually defer to the Hidatsa regarding the treatment of North Dakota sites.

Nomadic Plains groups, the Assiniboine, Chippewa/Ojibiwa, Cheyenne, Yanktonai and Sioux also moved through Central North Dakota in the last 200 years. They raided, traded, and occasionally allied themselves with the Mandan, Hidatsa and Arikara. The documentary record for the Yanktonai presence in the project area is most complete.

A Lower Yanktonai winter count indicates the Yanktonai penetrated as far west as the Missouri River by 1724, when an encampment was made on the lower Grand River, South Dakota (Howard 1976:28). Yanktonai winter camp locations described in the John K. Bear winter count range northwest from the lower Big Sioux River to the middle James River, and from there, west across the Missouri River to the Killdeer Mountains of West-Central North Dakota (Howard 1976:28- 41).

Some Yanktonai were in the Killdeer Mountains from 1760 to 1830. From 1831 to 1860 these Yanktonai lived in the village site across from Washburn known as Ice Glider (Howard 1976; Wood 1986). "Upper Yanktonai informants have told me that their people hunted and wintered on both sides of the Missouri as far north as Painted Woods, near present Washburn, North Dakota"(Howard 1976:5). They considered these areas on the border of their territory.

The relationship between the Yanktonai and the Mandan, Arikara and Hidatsa was complex and changed over time. Episodically they shifted from being enemies to trading partners and allies--they intermarried and occasionally the Yanktonai fought side by side with the villagers against the Teton Sioux.

The historic ceremonial activities of the Mandan, Arikara and Hidatsa have been described in detail by ethnographers (Bowers 1950, 1965; Schulenberg 1956; Will 1928, 1930a, 1930b). Furthermore, they have been compiled and explicitly related to archaeological manifestations and TCPs (Deaver 1986; Deaver and Manning 1992).

Hidatsa and Mandan

According to Hidatsa religious discourse, all supernatural powers have their origin at the beginning of time when the earth, or "in between" land, was formed. During the formation of the earth, First Creator and other mysterious figures created a number of supernaturals from which the Hidatsa could acquire power and, consequently, ensure their continuing existence by performing particular rites. These powers are acquired through vision quests. In the case of the Hidatsa, older brothers took younger ones to fasting centers when ceremonies including fasting and personal sacrifice were practiced (Bowers 1965:290- 295).

The Hidatsa, like the Mandan, performed a series of bundle ceremonies on a calendrical basis to ensure the universe would continue to function properly. Like the Mandan, the Hidatsa conducted many of these group ceremonies in their riverine villages. However, some bundle ceremonies needed to be conducted in upland locations.

Whereas offerings to the spirits represented in sacred bundles were ordinarily placed on poles within or adjacent to the summer villages, offerings made to the Earthnaming bundles were placed near the various buttes while out of the villages on summer buffalo hunts. Of these buttes, four were known as "Buffalo Spirit Places": Buffalo Comes Out Butte, Singer Butte (Killdeer Mountains), Buffalo Home Butte, and Rosebud Butte. At each of these buttes, offerings of feathers from the speckled eagle were made to increase the buffalo herds. The feathers were tied in bundles to buffalo skulls and placed near caves situated under overhanging cliffs* * * (Bowers 1965:436). The area defined by the "Buffalo Spirit Places" encompasses the project area and so the Earthnaming Bundle provides a clear link between the landscape of the project area and the spiritual qualities of the earth recognized by the Hidatsa.

Effigies found in the uplands also provide a material culture link between Hidatsa and Mandan theology and the landscape. Most effigies were boulder outlines of turtles and snakes. Generally, they are located on high bluffs along the Missouri River. The head of the turtle effigies point to the river. Historically, cairns associated with these effigy figures are related to individual offerings made to clear fogs so that buffalo herds could be found (Bowers 1965:337n):

> The next night we camped by a circle of stones in the form of a turtle. The gods had arranged these stones, the older men said, for none living had ever seen one of these effigies made. There was a hill nearby and on it was a pile of rocks. The turtle's head was pointed to the river because the turtles stay in the water so the gods must have arranged all the turtle outlines that direction. . . Anyone could make offerings of knives, pieces of hides, or dry meat and other things to eat when asking for rain or other good luck such as living to be old. If they had children they would ask the gods that go with the turtle to send good luck. To give to the turtle was the same as giving to all the other gods that went with the bundle (Crows Heart in Bowers 1965:370).

Historically when away from the riverine villages, the owners of the Big Bird, Missouri River and the Creek bundles performed hunting ceremonies at various stone effigies associated with these bundles (Bowers 1965:369-370).

Arikara

Arikara ceremonies like that of the Mandan and Hidatsa centered on ceremonies associated with sacred bundles. None of the ceremonies could be performed until at least one, and preferably more, of the bundles was opened on the altar at the back of the sacred lodge. Only those that owned the bundles had the sacred knowledge required to perform these ceremonies. All ceremonies were preceded by a one-day rite of purification known as the Sage Dance, which included fasting and ritual bathing in a sweat lodge. The Sage Dance required white body paint obtained from special clay in the Little Missouri Badlands, which was used at no other time (Will 1930a:247-249 and 1928:56).

Arikara ceremonial lodges are associated with large boulders. According to Howard (1972:299-300), the Yankton, other Dakota groups and the Arikara viewed large boulders as sacred/*wakan*, and the locales of these stones were regularly visited for prayer, prophecy and ceremonies. Two of the best-known examples of these sacred stones are the Tunkan or Oracle Stone [originally located near the mouth of the Turtle River near Redfield, South Dakota] and the revered *Inyan* bosdata or Standing Rock, now located at Fort Yates, North Dakota. According to Howard, both of these were originally Arikara monuments or shrines:

> In each of the Arikara villages there was a sacred stone in front of the sacred or ceremonial lodge where the tribal bundles were kept. This stone represented Chief Above, the Creator. Beside it stood, during ceremonies, a cedar tree which represented Mother Corn, who had led the people from their original homeland underground. . . It would seem likely that these sacred stones, left behind by the departing Arikara, would be treated with veneration by the Dakota invaders . . . who would weave their own interpretations about them (1972:299-300).

Sioux and Assiniboine

Historically, the most basic spiritual concept for all of the Sioux groups and the Assiniboine is *wakan*. There is extensive literature devoted to *wakan* in Siouian thought and theology (Rodnick 1938; Densmore 1918; Brown 1983; DeMallie 1984; Dorsey 1894; Huitkrantz 1981f; Feraca 1963, Neihardt 1961; Powers 1975, 1982; Howard 1984 and Walker 1917). Linguistically the term is made up of two particles wa- and kan.

According to Little Wound and George Sword, "Wa means anything which is something." *Wakan* means something that is kan. "Kan," according to George Sword, "means anything that is old that has existed for a long time so that should be accepted because it has been so in former times or it may mean a strange or wonderful thing or that which can not be comprehended or that which should not be questioned or it may mean a sacred or supernatural thing. . ." (Walker 1983:27).

In Sioux and Assiniboine theology, the *wakan* can be manifested in particular topographic features, e.g., cliffs that contain round rocks. Monumental stone features such as medicine wheels (Deaver 1982; Kehoe and Kehoe 1959) and stone effigies (turtles and snakes) are often used or interpreted as marking *wakan* areas (Deaver 1981; Howard 1972). The *wakan* may more easily be contacted in certain locations. Therefore, vision quest sites are associated with

isolated topographic features, particularly in the rugged topography of mountains and hills and around large bodies of water and isolated islands. At least two kinds of rocks are *wakan*. One is like an ordinary stone, but it makes you pick it up so that you can recognize it by its special shape (Lame Deer and Erdoes 1972:101); and the other are tiny ice like rocks collected from anthills (Lame Deer and Erdoes 1972:123). Walker also specifically notes that cliffs with round rocks in them and rock are *wakan* (1980:101-103). Rock art is *wakan*. This is often because it marks the site of a vision quest and/or depicts supernatural events and/or communication (Deaver and Fandrich 1999).

Howard's description of Yanktonai eagle trapping indicates that the ritual closure of the pit may generate a stone ring with a diameter of 10+ meters:

> After the trapper had removed the feathers from his eagle, or eagles, he returned to his eagle-trapping pit, bearing the remains of the bird encased in sage. This he placed in the center of the pit, together with the stuffed rabbit skin lure. The eagle carcass was placed on its back, the head to the west, and tobacco was sprinkled over it. Stones were then placed upon it and the pit was filled in. A circle of large stones, about thirty-five feet in diameter, was laid around the area, designating it as an owanka *wakan*, or "holy place." Judge Zahn commented that many of the so-called "tipi" rings derived from this custom, and pointed out that many of these are situated on high bluffs, which would be ideal for eagle trapping sites but very poor as camp locations (Howard 1954:73).

All Sioux groups and the Assiniboine practiced the vision quest whereby an individual petitioned the *wakan* for aid. The vision quest included preparatory ritual purification (usually involving a sweat bath), preparation of the fasting locality, isolation of the individual from the community for a set period (commonly 4 days), making offerings to the *wakan* (tobacco, calico flags, flesh, sweet grass, sage and so on), fasting and praying. Preferred localities for vision quests for all the Sioux groups and the Assiniboine are secluded. Generally, the most common localities are isolated topographic features such as buttes, hills, cliffs, ledges and so on. Locations near water, and hence, the Underwater Powers were also commonly used as sites for vision questing (Deaver 1981; Howard 1984; Powers 1975, 1982; Rodnick 1938).

Successful vision quests can result in the petitioner receiving communication from the *wakan*, including directions for collecting material items to be used as personal insignias of power. When collected, these items make up the personal medicine bundle. Common components of medicine bundles are pipes, eagle feathers, stones, pigments, plants etc. These items have associated sacred texts, songs, dances or dance steps and rules concerning their use and curation. The only bundle resembling a tribal medicine bundle is the Buffalo Maiden Calf Pipe Bundle. This bundle was given to a culture hero along with seven ceremonies including the Sun Dance (c.f., DeMallie 1984; Feraca 1963; Neihardt 1961; Powers 1975).

Both the Assiniboine and Sioux build and use sweat lodges prior to vision questing (Powers 1975:90; Rodnick 1938:30). Additional individual activities directed toward petitioning the supernatural include placing offerings (stones, tobacco, cloth flags) in remote locations (Deaver 1981:3.16; Dorsey 1894:448-449; Howard 1984:104-105; Powers 1975:50 and 1982:14; Walker 1980:101-103) and the collection of holy rocks by spiritual specialists (Lame Deer and Erdoes 1972:101, 103).

The Sun Dance of the Teton and Assiniboine, like that of the Yanktonai, includes a great amount of ritual diversity. Each Sun Dance leader uses his experiences and visions in order to structure the ritual. There is no one accepted form of the ceremony. The aboriginal Assiniboine and Teton dance lodges were constructed by combining several tipis (Lowie 1910; Mails 1973; Rodnick 1938). The modern Teton lodge is constructed of two rows of forked ash posts that form concentric circles with an opening to the east. These posts are joined with saplings and pine trees and brush is laid across them to form a shaded area where spectators will watch and participants will occasionally rest. The diameter of a contemporary lodge is approximately twenty-five feet, but may vary widely (Powers 1975:66). According to Feraca, the interior of the dance lodge is completely open to the sunlight and the spoke-like rafters radiating from the center pole. Common to other Plains tribes, dance lodges have never been a feature of the Teton Sun Dance lodge (1963:13). As is the case with other Plains tribes, the lodge is not torn down after the ceremony. It is left to deteriorate from exposure and thus return to Mother Earth (Powers 1975:100).

Today, the Sun Dance, the sweat lodge, the *Yuwipi* ceremonies and the vision quest are the centerpoints of traditional religion. In addition, for many Sioux and Assiniboine they are symbols of ethnic identity as well (Deaver 1981; Mails 1978; Powers 1975, 1982).

Tribal Perspectives

The descendants of the Mandan, Hidatsa, Arikara, Sioux and Assiniboine who follow traditional embrace a world view that emphasizes the inter relationships between the past and present, the living and dead, the people and environment and the spiritual and physical aspects of life. Time, from this perspective, is not only a chronological ordering of events, but it also has a quality and texture, which exists in the past, present and future.

Time, or more accurately tradition, establishes the rationale and basis for living in the proper fashion. From this per-

spective, there is often an intimate relationship between a person and his past. Time, or the past, provides a template for the proper way of life. It legitimizes the present by showing it is related to things that have gone before. The spirits present at the creation of the world continue to be present in the landscape today. This is why a person making a fast today, or a Yuwipi man during a ceremony, can communicate with the spirits and be given guidance. This guidance can include direction for the appropriate treatment and interpretation of stone feature sites.

The location of a cultural place (archaeological site or historic property) is interpreted as evidence that ancestors recognized the physical and spiritual characteristics of the landscape, which made it an appropriate place to camp, fish, hunt, gather, fast and so on. Because Indian people today can still recognize these same physical and spiritual characteristics of the landscape, there is a continuing tie between the people and the landscape of yesterday and today. It is this sense of relationship that is important.

A connection to one's ancestors is highly valued. Consequently, cultural places must be shown respect. People visit cultural places, sometimes praying and making offerings. This allows them to renew their ties to these places and the historic landscape in general. In other words, these cultural places become the focus of pilgrimage. The spiritual and physical qualities of the place, as well as its traditional cultural use, are important characteristics that transcend time.

The most important change in the Affiliated Tribes relationship to their land base in modern times came with the 1955 construction of the Garrison Dam and the subsequent inundation of the Missouri River bottomlands. The Garrison project reduced the land base of the reservation by 150,000 acres. More importantly, the flooding destroyed Like-A-Fishhook, Grandmother's Lodge and other traditionally important cultural places. It flooded cemeteries, traditional shrines and literally all of the reservation communities. Ninety percent of the reservation inhabitants were forced to move (Schneider 1986:105-106).

The construction of Garrison Dam forever changed the Affiliated Tribes relationship to their spiritual, cultural and physical environment. Not surprisingly, those sites that were not flooded have become even more important because they represent heritage and spiritual ties to the land that are seen as endangered. Sites in the project area have great significance to the peoples of Fort Berthold. The creation of Lake Sakakawea combined with extensive lignite mining and intensive mechanized agriculture has greatly limited the number of sites that the Indians with historical cultural ties to western North Dakota can access to renew their ties to the landscape. Further, those sites now remaining have already been impacted because the meaning of places is partially derived from their association with other places. Thus, places assume a great significance in Indian history. Many locations are sacred because of the events that occurred there or because the supernatural seemed to be very close at that site. Warm springs or unusual rock formations were obviously areas of special power that figure prominently in Indian histories (Schneider 1986:46).

Children are taught the traditional cultural significance of these special places:

> . . . it was the custom of many Hidatsa families to return to living sites and to point out to the younger people the depressions of lodges where certain relatives had lived, their graves or earth rings on the prairies where various ceremonies such as the Naxpike or Wolf ceremonies were held (Bowers 1965).

The traditional descendants of the Hidatsa, Arikara, Mandan and Yanktonai recognize both spiritual and physical qualities of the project area landscape. This includes various places recorded as archaeological sites.

Like their ancestors, contemporary traditionalists believe that when they live in a place they must harmonize their actions so that their actions are both physically appropriate and spiritually compatible. Today, as in the past, when a young person goes to fast, he consults with his Elders who direct him to locations that are physically appropriate, relatively isolated, private, secure and spiritually appropriate, a place known for the presence of spirits. A tribal consultant was directed by his father to go to a site in the project area to fast.

According to Hidatsa, Arikara, Mandan and Yanktonai beliefs, their ancestors, who lived in and traveled through the project area, also recognized the same spiritual and physical characteristics Indian people recognize today. They chose their campsites, set up their tipis, made tools, hunted buffalo and deer, collected plants, buried their dead, fasted, prayed and held council meetings in places that were spiritually compatible as well as physically appropriate for these activities.

Consequently, when the tribal cultural representatives are asked to evaluate sites, they look first where the site is on the landscape. They discuss the landscape in general and phrase their responses and evaluations in terms of both physical and spiritual characteristics of both the landscape and the material culture (features, lithics, etc.) used by archaeologists to define sites.

Stone feature sites are common in the project area. The tribal cultural representatives describe and evaluate these sites in terms of both spiritual and physical reasons why stone feature sites are in particular locations. They recognize the same sort of physical variables as those recorded by archaeologists, such as distance to water, availability of plants, panoramic views of the area and so on. Additionally, site loca-

tion/distribution patterns are read as physical representations of traditional beliefs. For the Yanktonai, for example, the location of ring sites relative to drainage patterns follow and mirror the spiritual pathways described in their creation stories.

Traditional Cultural Values, Stones, and Stone Feature Sites

Throughout their history, stones have been ceremonially important to all of the tribes involved in this project. Sacred stones recognized by the ancestors of the Three-Affiliated Tribes have been recognized, respected and honored by the later Siouian peoples as they moved in the area. Siouian peoples incorporated Arikara oracle stones into their belief systems because they had always-recognized *Inyan* (Stone), the Grandfather, and the first supernatural created by the Great Mystery. The sacredness or spiritual qualities of the stone features in the project area are part of the same tradition that recognized the sacred stones in Minnesota and eastern North Dakota.

This natural object [Rock *eya* (Sioux), *mih* (Mandan)] had physical properties as well as spiritual properties. From a physical point of view the Rock can protect you-to hide behind it in a storm or fight; it can cure you- heat them up to use during Sweat Ceremony; it can harm you-if someone threw one at you. From a spiritual point of view the rock can protect you-many individuals wear a small Rock in a pouch around their necks for protection against certain spiritual forces; it can cure you -certain Rocks can be rubbed until warm then used to touch certain ailing part of the body. In this way the Rock is a silent teacher. (Project Consultant, Personal Communication 2001)

Single stones, called glacial erratics by geologists, have long been recognized by the Sioux as having important spiritual attributes. They were used as a shrine where prayers and offerings were made. Even when forced to leave areas, the Sioux took measures to insure that these stones were treated respectfully. In this view stones are essential to spirituality. They are used in prayer. People communicate with *Inyan* through rocks. Stones are active in ceremony and must be respected (Project consultations, Personal Communications, 7/11-12/2000; see also Walker 1980).

According to Finger, a Lakota shaman interviewed by James R. Walker in 1915 on Standing Rock, *Inyan*, the Rock, was the first supernatural in existence. He is the grandfather of all things. *Inyan* is a part of a complex and intricate theology through which Lakota spiritual specialists or medicine people understand the world and their place in it. As in other communities, detailed theological knowledge is limited to people like Finger who devote their lives to its understanding. Traditionalists recognize that Rock or *Inyan* is a powerful spiritual being. He is prayed to and addressed as Grandfather. He is offered red prayer flags along with tobacco. He is recognized in the stone features found over the prairie, including the project area. Stone features are both a symbolic representation of His presence and a physical marker of His significance in the world. *Inyan* is the primal source of all things. People still pray and make offerings at stone features today.

Stone rings are powerful places. "When a person fasts in a circle [of stone], it is as if you are buried alive. You may not come out alive" (Tribal Consultation, Personal Communication 6/12/2000). Accordingly, rings provide a conduit from the person praying to the spirits above and there are potential spiritual consequences of going to the stone feature sites.

Stone features, described by archeologists as petroforms or effigies, are read as physical symbols of the continuing relationship between the spirit world and that of man. Effigies mark locations that have always been, and continue to be, appropriate places for fasting, prayer and making offerings, i.e. communicating with spiritual beings. The patterns made by the stones are recognized as representations of the spiritual qualities of the area. For generations people have visited these effigies and conducted ceremonies. They continue to use these places today. The tribal cultural representatives regard continued access to these sites as critical to their continuation as a people.

Cairns, stone piles created by men, may represent many different activities. They may be trail markers or contain burials. When grouped in lines they may be drive lines associated with hunting activity or prayer lines when associated with ceremonial activities. Cairns may be built all at one time or may be added to over the years by many different peoples. Cairns may hold offerings. Generally, the larger the cairn and the higher its profile the more likely it is to be associated with human remains or a particular ceremonial activity (Deaver 1986).

According to some traditional Sioux, all rock art is *wakan*. Further, it is in the male ceremonial realm.

Plants and animals are not spoken of as natural resources. Rather, they are described in biographical terms, as relatives. They are conceptualized and treated as persons. They are talked with and offered tobacco. They are part of the same community as humans. Just as the plant and animal people have a responsibility to provide food for the human community, humans have the responsibility to ensure that the environmental conditions suitable to sustaining the plants and animals are maintained (see King 1999 and Davis 2000 for similar concepts among the Chippewa/Ojibwe).

Early in the discussions with tribal representatives, a great deal of interest was expressed in the plants found in the project area. They were interested in seeing native plants being used in the revegetation plans and getting access to harvest traditionally important plants.

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